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UNUNITED FRACTURES OF THE SHAFT OF THE HUMERUS

CHAIRMAN'S ADDRESS

W. BARNETT OWEN, M.D.

LOUISVILLE, KY.

Only complete failure of union will be considered in this discussion and report. Delayed union is not included. I have not considered any true cases of nonunion until at least six months has elapsed. The principal causative factors in nonunion of the shaft of the humerus are, first, failure of reduction and maintenance of reduction and fixation for a sufficient length of time; second, failure of direct bony contact, prevented by interposition of soft tissue; third, early operative intervention with insertion of nonabsorbable material, and, fourth, constitutional or debilitating diseases and metabolic changes. I will not go into the details of the physiology and biology of wound healing, but it is necessary to understand certain fundamental laws regarding bone healing to consider nonunion effectively. The work of Leriche and Policard is a monumental treatise on this subject and explains in detail the pathologic physiology of ossification and healing of fractures.

The essential changes that take place following a fracture may be stated thus: Immediately following the fracture there is always hemorrhage, with formation of a clot. This organizes, fibroblasts form, and later there is a deposit of calcium salts. The exact mechanism of the deposit of calcium and formation of callus is not thoroughly understood, so the failure of the formation of callus and the failure of union cannot always be explained satisfactorily. So, too, the fate of grafted bone is a moot question; but, if it does not live, it surely stimulates osteogenesis and forms a structure for the formation of new bone and supplies calcium in abundance at the site of the healing process. At first there is the "stimulus of incompleteness," as John Hunter called it, and nature tries hard to bridge the gap. If there is interposition of soft tissue, or frequent attempts at reduction interfering with the formation of callus, nature seems to get disheartened and allows the ends of the fragments to become sealed over and seems satisfied with only fibrous union. After this condition has set in, the soil is no longer fertile and unusually strong pressure must be brought to bear to stimulate osteogenesis. This "stimulus of incompleteness" must be reestablished by breaking the continuity of the vascular system and allowing nature to have a new chance at healing.

Read before the Section on Orthopedic Surgery at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 15, 1933.

Albee [1] lists the causes of nonunion as follows:

1. Granulation tissue may fail to bridge the gap:
   (*a*) Because of the interposition of tissue which the granulations cannot penetrate.
   (*b*) Because the fragments are so displaced that the two areas of granulation cannot meet.
   (*c*) Because of too extensive removal of blocks of living bone after fracture has left the fracture surfaces too far apart.
2. Granulation tissue may degenerate into scar tissue before ossification has been established.
3. The early granulation tissue may be disrupted by manipulation or inadequate immobilization.
4. Disorganization may be produced by rough manipulation after the formation of soft callus.
5. Marked circulatory disturbance at the site of fracture.
6. Infection.
7. Foreign material, such as the insertion of Lane plates.
8. Absorption of solid callus before restoration of trabecular alinement has been completed. He states further that reparative response after fracture seems strikingly independent of the systemic condition.

Cubbins and Scuderi [2] reported a series of 500 consecutive cases of fracture of the humerus, treated in Cook County Hospital, Chicago. Their conclusions are as follows: Ninety-four and four-tenths per cent of these cases were treated by closed methods. Nonunion or delayed union occurred in 3 per cent and radial palsy in one of every eight cases of fracture of the middle third. (For economic reasons, nonunion and delayed union were not carefully differentiated.) All the cases of nonunion occurred in fractures of the middle third of the shaft, the transverse type of fracture being the greatest offenders while the comminuted type healed with solid bony union. Cubbins and Scuderi further stress the points that foreign bodies should be avoided as much as possible in open reductions and that the periosteum should be left intact whenever possible. I believe it is quite possible many times that foreign material, such as plates, keeps the fragments apart, institutes rarefying osteitis and actually prevents union even though the fixation is very secure. The autogenous onlay graft has three distinct advantages, namely,

1. It furnishes efficient fixation of the fragments.
2. There is a large area of healthy, viable bone brought in contact.
3. Being autogenous, there is little reaction or excitation on the part of the tissues to extrude it. It acts as a superstructure until it is resorbed and replaced by new viable bone.

As previously stated, once the condition of nonunion is established the stimulation of union is exceedingly difficult and calls for radical measures. Regarding the

1. Albee, F. H.: Principles of the Treatment of Nonunion of Fractures, Surg., Gynec. & Obst. **51**: 289-320 (Sept.) 1930.
2. Cubbins, W. R., and Scuderi, C. S.: Fractures of the Humerus, J. A. M. A. **100**: 1576-1579 (May 20) 1932.

present small series and previous experience with ununited fractures, I feel that the massive onlay graft is the operation of preference. These cases are most stubborn, and nothing short of radical procedure and the reestablishment of normal circulation and extensive bone contact will induce union. The technic of the operation is rather difficult and time consuming and requires a corps of trained assistants; but I believe the end justifies the means.

The details of the operation that I have used in the present series are essentially as outlined by Campbell [3] and are as follows:

An incision is made over the outer aspect of the arm, extending approximately 3 inches above and below the site of fracture. The fascia and muscles are divided and the musculospiral nerve is located and retracted. The sealed or eburnated ends of the fragments are removed with a saw and the ends of the bones step-cut to allow more raw bone surface to come in contact. The medullary canal is thoroughly freshened with a curet, all scar tissue being removed. The removal of scar tissue whenever possible is highly important, as it interferes with normal circulation. The periosteum is incised longitudinally and stripped backward with a sharp osteotome, as many bone cells as possible being left attached. Then the bony surface of the broken fragments is flattened with a chisel, and the ends are carefully fitted together and made ready for the onlay graft.

The onlay graft is removed from the internal surface of the upper two thirds of the opposite tibia, about three-fourths inch wide and of ample length, usually from 6 to 8 inches. Holes drilled in the prospective graft are located and made before the removal of the graft. Accurate measurements can be taken in order to have these properly placed. Then the graft is removed, including all structures. A small additional graft is taken one-fourth inch wide, which is the usual dimension of the drill used. This is then cut in pins of ample length to go through the graft and both cortices of the humerus. From two to three pins are inserted above and below the fracture line. Some of the cancellous bone from the tibia at the upper end is removed and packed round the fracture line of the humerus. The graft is held in place with bone forceps, the holes are then drilled through both cortices of the humerus, and pins, which have been previously provided, are inserted. Two strands of number 3 chromic catgut, doubled, are placed round the humerus and the graft at each end and tightly tied in order to reinforce the stability of the graft. The periosteum, which has been previously retracted with underlying bone cells, is drawn to the side of the graft as far as possible. The deep wound is closed with interrupted sutures, the graft being carefully covered with as much muscle and well nourished tissue as possible. The remainder of the wound is closed in layers, sterile petrolatum gauze is applied to the skin incision, a dry dressing, and a previously provided plaster spica is slipped on and carefully placed, with due precaution not to get undue pressure on the ulnar nerve. The forearm is placed in supination, the hand slightly dorsiflexed, the fingers being left free to grip. The patient is kept off his feet for at least six weeks, not entirely on account of the graft having been removed from the tibia but because I feel that more complete immobilization can be attained if the patient's body is kept quiet. Fixation dressing is kept on the arm for at least four months. Roentgen inspection about once a month should be made. At the end of three months the top is removed from the arm cast for application of heat and light massage.

At this time I present the end-results of treatment in eight cases of ununited fracture of the humeral shaft treated by the massive onlay graft method. In this series the average time elapsed from the initial fracture until the onlay graft operation was performed was twenty-two months and the average age of the patients operated on was 38 years. The youngest patient was 28 and the oldest patient 57. The longest time since the onlay graft was performed for ununited fracture of the shaft of the humerus is eleven years and the last case considered in this series was thirteen months. Of the eight patients, five had had previous open operation, varying in type. All had some foreign material inserted; one patient had had five open operations before the onlay graft method was used. One of the eight cases reported is a failure. While nonunion of the shaft of the humerus has been reported as occurring more than any other bone except central fracture of the neck of the femur, my observation has been that nonunion has occurred more frequently in the lower third of the tibia than it has in the shaft of the humerus.

3. Campbell, W. C.: A Textbook on Orthopedic Surgery, Philadelphia, W. B. Saunders Company, 1930, pp. 424-425.

REPORT OF CASES

CASE 1.—J. D. E., a man, aged 30, an airplane pilot, was cranking a seaplane in New Orleans in January, 1921, when the engine back-fired and he suffered a comminuted fracture of the lower third of the left humerus. An open operation was performed the following day, which consisted in the removal of one of the broken fragments of bone and the application of a Parham-Martin band. The patient came to me four months later with nonunion, a definite rarefying osteitis, and wrist drop as a result of injury to the ulnar nerve, probably at the time of the accident. May 13, the band was removed, the fragments were freshened and the ulnar nerve, found to be partially severed, was sutured and a flap of fascia and fat was placed around this portion of the nerve, the wound was closed, and an external fixation dressing, which consisted of a plaster spica, was applied with the arm in 90 degrees abduction and the wrist dorsiflexed. The bones showed no disposition to unite because of the lack of maintenance of continuity and devitalization of the broken ends. Oct. 30, 1922, a massive onlay graft was applied in the manner previously described. A fixation dressing, composed of a plaster spica, was reapplied. This dressing was removed entirely in about five months. Recovery from the ulnar nerve paralysis was complete. Laboratory examination showed nothing of interest. The final functional result has been excellent, with firm bony union.

CASE 2.—F. J., a white woman, aged 45, fell on a sidewalk, July 6, 1926, and sustained an oblique fracture of the left middle humeral shaft. Six days later an operation was performed, a silver wire being used to fix the broken fragments. The patient was referred to me, March 21, 1927. The following day I did a massive onlay graft operation, removing the wire and at the same time applying a previously prepared, bivalved plaster spica. This was removed at the end of three months. There was definite clinical and roentgen evidence of solid bony union. Physical therapy was instituted to hasten function of the elbow and wrist. The result was good.

CASE 3.—Mrs. M. E., aged 57, white, very obese, a housewife, fell on the street, Sept. 14, 1930, sustaining a fracture of the middle of the shaft of the left humerus. An intramedullary beef-bone peg operation was performed shortly after the injury. Five months later, while the patient was turning in bed, there was a fracture of the peg. In March, 1931, an osteoperiosteal chip graft was done after removal of the pins and an external fixation dressing was applied, which remained on for sixteen weeks. Union was not complete. Blood chemistry, metabolic rate and complete blood examination were all normal. The Wassermann reaction was negative. Feb. 16, 1932, a massive tibial onlay graft operation was done. The patient was discharged from the hospital fourteen weeks later wearing a plaster spica to the left shoulder. After eighteen weeks the cast was removed and a roentgenogram showed firm bony union. One week later the patient tripped on a rocking-chair and fractured the humerus at the original site of the fracture. Another massive onlay graft operation was done and a fixation dressing reapplied. Union has not occurred. This is the case which I referred to as a failure.

CASE 4.—S. N., a white man, aged 28, an oil well driller, was admitted to the Louisville City Hospital, Feb. 21, 1927, with a diagnosis of ununited fracture of the left humerus, with partial paralysis of the radial nerve. The patient stated that he caught his arm in the fly-wheel of a gasoline engine, Aug. 5, 1923, sustaining a compound, comminuted fracture of the shaft of the left humerus in the middle third. The arm was operated

on immediately, the broken fragments were removed, the remaining ends were wired together with silver wire and an arm splint was applied. In August, 1923, a loose piece of bone was seen by roentgen examination and another operation was performed for removal of the loose fragment, at which time it was rewired. The wound was infected, and treatment with surgical solution of chlorinated soda was instituted. The patient was then allowed to get up and carry the arm in a sling. A roentgenogram, Feb. 23, 1927, showed a gap about 1 inch wide between the fragments; there was no evidence of infection or callus. The Wassermann reaction was negative. The usual laboratory examination gave results within the normal limits. The massive onlay graft operation was performed in 1927 and a previously prepared abduction spica was applied to the shoulder. The wound healed by primary union and the patient was discharged from the hospital but returned to the clinic for observation from time to time. The cast was removed four months later and union seemed firm. The last report was that there was restoration of about 75 per cent of normal function. No pain was felt and there was firm bony union. The patient was last seen, Sept, 19, 1928, at which time he had a good, useful arm with bone firmly united.

CASE 5.—W. C. R., a white man, aged 33, a railroad employee, was admitted to the Louisville City Hospital, May 26, 1926, with a diagnosis of ununited fracture of the middle third of the right humerus. The patient stated that five years previously he had a fracture of the right humerus and had had five open operations performed, which included an intramedullary beef-bone peg, a Lane plate, a silver wire and an osteoperiosteal graft. June 12, 1926, a massive onlay graft from the left tibia was placed, with fixation dressing. His convalescence was uneventful. He was discharged from the hospital, October 21, and there was firm bony union. Return of function of the elbow and shoulder was present to about 75 per cent of normal.

CASE 6.—F. J. J., a white man, aged 36, a salesman, was injured in an automobile wreck in 1926. His right arm was resting on the door of his automobile and was side-swiped by a truck, which resulted in a fracture of the middle of the shaft of the right humerus. The fracture was treated conservatively, with external fixation dressing. He consulted me three years later, with a definite nonunion of the humerus. There was a typical pseudarthrosis at the site of the fracture. The nerve was not involved. Oct. 21, 1929, a massive tibial onlay graft operation was performed, a graft being taken from the left tibia. A previously prepared spica cast was applied. This dressing was removed four months later. The patient moved to Birmingham, where he was observed by Dr. Laurence Scott of that city. Dr. Scott reported to me that his observation, which included roentgen investigation, showed firm bony union. Six months after all the external splints had been discarded the patient was in another automobile accident and was thrown from the car. At this time he sustained a fracture of the graft at the original fracture line. An external fixation dressing was applied in the hope that union might take place, but this was a disappointment. March 31, 1922, another massive tibial onlay graft operation was performed, a graft being taken from the right tibia. An airplane splint, which had been made to fit securely, was applied because the patient objected to the weight and heat of the plaster. This time the wound healed primarily, as before. The splint remained on for four months, at which time there was firm bony union, shown by clinical and roentgen examination. A light plaster arm splint was applied for protection, and remained on for two months longer. The patient was allowed to use the arm in a limited way. It has now been fifteen months since the last operation. He has firm bony union and normal restoration of function of the right arm.

CASE 7.—L. T., a Negress, aged 47, a housewife, was struck by an automobile, Jan. 14, 1932, while crossing the street, being knocked unconscious and sustaining a fracture of the right humerus, the middle and upper third of the right tibia and fibula, and the left tibia and fibula. She was removed to the Louisville City Hospital, where a Jones arm splint was applied the following day. March 29, an airplane splint was applied. Four months later other fractures sustained at the same time had healed. Clinical and roentgen examination showed no disposition for the broken fragments to unite. Six months after the fracture a massive onlay graft operation was performed by my associate, Dr. R. T. Hudson, who was in the orthopedic service of the Louisville City Hospital. The Wassermann reaction was negative; the blood examination was normal, and the blood chemistry was within the normal limits. In November, 1932, the cast was removed and the patient returned for observation at the clinic from time to time. She was last seen, April 10, 1933, when clinical and roentgen investigation showed firm bony union and complete restoration of normal function of the arm and shoulder.

CASE 8.—J. R., a white man, aged 30, a miner, was injured in a mine accident in September, 1929, sustaining a fracture of the shaft of the left humerus. He was treated by a mine surgeon, who applied traction and later an airplane splint. The patient was admitted to the Kentucky Baptist Hospital in January, 1930, with no union of the fragments and complete disability of the left arm. The Wassermann reaction was negative. Urine and blood examination gave normal results: Blood calcium was normal. Feb. 1, 1930, a massive tibial onlay graft operation was performed followed by a previously prepared bivalved plaster spica. There was temporary wrist drop following the operation, which cleared up after six weeks. Final check-up showed firm bony union with normal restoration of function.

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HYSTERICAL FUGUES

REPORT OF CASES

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Hysteria was regarded by Hippocrates as the reactions of distress caused by wanderings of the uterus. This concept prevailed until early in the seventeenth century, when hysteria in men was first described. Sydenham [1] (1682) recognized mimicry of other diseases and conditions, together with great changeability, as features of hysteria. Although it has been given a medical interpretation from the beginning, it has been intimately associated with religion, mysticism and folklore. Charcot [2] has given an interesting description of miraculous cures at the temple of Aesculapius in ancient times. Doubtless some of these were cases of hysteria. Madden [3] discussed many epidemic disorders of the mind which prevailed in Europe between the thirteenth and eighteenth centuries; among other phenomena he described witchcraft and epidemic hysteria. One of the proofs of witchery was the discovery of an anesthetic area on the body known as the "devil's claw." From a modern medical standpoint, such a discovery would always bring up the possibility of hysteria.

Hysteria is difficult to define. No one doubts that suggestion is a factor in its etiology as well as in its therapeusis. The personality disintegrates, usually temporarily, in the face of problems or stress. Various functions of the person, judged by the usual standards of health, are deleted or disordered, such as looking, listening, talking, walking, working, eating, sleeping, resting, remembering, thinking, feeling and awareness of the environment. Such predispositions, apparently of a constitutional nature, are common to many patients so afflicted. It would probably be the better part of

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2. Charcot, J. M.: La foi qui guérit, Arch. de neurol. **25**: 72, 1893.
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wisdom to recognize hysteria as an open field of biology in which there are ample opportunities for gaining more comprehensive knowledge.

The words fugue and fugitive have a common Latin origin in the word *fuga*, meaning flight. Terms more or less synonymous with fugue have been introduced into the literature on this subject, such as déambulation, dromomania, poriomania, impulsive vagabondage, ambulatory automatism, and in the German literature, *Wandertrieb, Wanderzustände* and *Fortlaufen*. The French in particular have presented numerous and thorough contributions on this interesting syndrome. Though some doubtful cases of fugue had been reported earlier, Tardieu,[4] in 1872, reported the case of a joiner who left his workbench and tools and went 60 leagues from his home; at the expiration of eight days he returned, not knowing why he had gone. In 1877, Legrand du Saulle [5] reported the exceptional case of a patient who, setting out from Paris, awakened on the boat before the city of Bombay. In 1878, Echeverría [6] of New York reported fugues in two cases of epilepsy. Tissié,[7] in 1887, discussed fugues at length in his thesis on "deranged wanderers." Charcot,[8] in 1888, first used the term ambulatory automatism in connection with a case of epilepsy. Duponchel,[9] in 1888, after Charcot's study, published a paper in which he attempted to discriminate between types of fugue. Subsequent to this date, fugues were described in alcoholism, manic-depressive psychosis, dementia praecox, hysteria and other neuroses, epilepsy, dementia paralytica, following trauma, and associated with uremia, malaria and other diseases. The necessity for accurate clinical differentiation was reflected in the extensive literature bearing on this subject. Since the majority of fugues seemed to be hysterical or epileptic in origin, differentiation of the two appeared of especial interest.

Definitions of fugue or ambulatory automatism were numerous. Pitres [10] defined a fugue as "a pathologic syndrome appearing in the form of intermittent attacks during which the patient leaves his home and makes an excursion or journey justified by no reasonable motive. The attack ended, the subject unexpectedly finds himself on an unknown road or in a strange town." Raymond,[11] in 1895, gave as the three cardinal symptoms of fugue: (1) an irresistible impulse to travel, (2) traveling accomplished in a regular, intelligent manner without mishap and (3) at the end of the impulsive action, complete loss of memory or amnesia covering the whole period of its duration. More recently, Cottu [12] and Parant [13] gave the most comprehensive account of the various definitions of fugues and allied disorders.

A fugue may or may not be a feature of one of the personalities in dual or multiple personality. Somnambulism is defined as sleep-walking, or it may be regarded as a fugue during sleep. Not uncommonly patients exhibit all of these phenomena, including amnesia, in the course of their illness.

In 1903, Heilbronner,[14] in a thorough study of fugues, reported fifty-seven cases, giving age of onset, occupation, heredity, etiologic factors, associated nervous phenomena and frequency and duration of attacks. Of this group less than 20 per cent were definitely epileptic. He found it difficult or impossible to distinguish between fugues in hysterical and epileptic patients. From a medicolegal standpoint, he felt that the normal state of the patient rather than that of the fugue should be the basis of consideration.

Janet's [15] studies of hysteria from a psychologic standpoint have been of great value. He regarded fugues as closely related to somnambulism but motivated by dominating ideas, occupying various degrees of conscious awareness. He reported several well studied cases.

In 1909, Benon and Froissart [16] reviewed fugues from a historical standpoint and gave a complete bibliography up to that date. The great interest in the subject in the latter half of the last century has subsided. Since 1909, only occasional papers on the subject and reports of cases have appeared in the literature. Fox [17] cited the case of a patient who recovered by the use of hypnotic suggestion. Dupré [18] reported the case of a person who had a mania for childish myths and imaginary tales and whose fugue was colored by such fantasies. Dupré and Long-Landry [19] reported a fugue in an elderly person who had a belief in his own divine abilities, not unlike one of my patients. The patient demonstrated catalepsy. Benon and Froissart [20] reported the relation of school and family influences to fugues in children. Stier [21] also reported fugues in children, most of which he felt to be due to petit mal.

Numerous fugues occurred during the World War, only a small number of which have been reported. Logre [22] and Barat [23] reported excellent examples of such. Gamlen [24] presented a detailed study of a case in which war experiences played a part. Mayer [25] gave an account of a fugue in a dual personality, not unlike one of my patients. And not to be overlooked are the press reports of the sudden vanishing of some person who is later identified, possibly far from home, unaware of his normal existence and often leading a life quite at variance with it. While such cases are by no means rare, they are always of great interest and afford excellent opportunities for the study of psychopathology. The history of three patients manifesting such phenomena, the remedies employed and the modes and circumstances of recovery are deemed worthy of report.

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REPORT OF CASES

CASE 1.—W. F. S., aged 27, a mechanic, was admitted to the psychiatric wards of the Albany Hospital on April 2, 1931, by his wife and family physician. They stated that he had been absent from home since March 30 and that when found he was standing on a street corner in a nearby village. His home town was unfamiliar to him. His clothing was torn and covered with coal dust, and his shoe soles were worn to the stockings. In his pocket were a golf ball, a knife, a cartridge shell and two small perfume bottles. He carried his discharge papers from the navy and stated that having just been discharged from the navy, he was en route to his sister's home. When taken to his home he did not recognize his wife or his brother-in-law, and he denied being married. His marriage certificate and pictures of himself were also unrecognized. He did not like to stay with his wife because he said her husband might appear, become jealous and cause trouble. He felt that there was some kind of a "put up job" on him.

The physical, neurologic and laboratory examinations gave essentially negative results. The patient's head was large, and he gave no evidence of violence. He was of asthenic habitus.

Soon after admission to the hospital, he stated that his memory had been bad for a month or two and that he could not recall any of the events of the preceding three days except that he believed he had been walking from the Brooklyn Navy Yard. He remembered being dishonorably discharged from the navy for being away without official leave, but he could assign no reason for it. He recalled being in an aeroplane accident in the navy, and he gave some details of his earlier life, but these were not clear. He thought that it was the spring of 1930. He puzzled much over "that woman" (his wife), whom he could not place; however, he said that he must be "ill" and "something must be missing."

From his sister the following information was obtained: The patient was born in New Jersey. His parents separated and each married later; the patient never got along with his stepfather. He completed the sixth grade at the age of 14 and was regarded as a poor student. He had a bad temper, masturbated excessively and stuttered much all of his life. In his sleep he talked and imitated animal calls, but did not walk. He had never had convulsions. Mechanical things interested him, and he worked around automobiles and aeroplanes whenever he could. After leaving school he had many jobs in succession, but worked longest as a hydroplane mechanic. In June, 1927, he joined the navy and learned to fly. In the spring of 1930 he was slightly burned in a hydroplane accident and had to swim nearly 2 miles to safety. For three weeks he was hospitalized chiefly because he was "unnerved." When nervous he was very tremulous. After recovery he was given a month's leave; he then returned to his sister's home in G. At the end of the leave he married his sister's sister-in-law. The day after the wedding he retured to the navy yard but, because he was twelve hours late and had married without permission, he was compelled to remain in the yard two months. Several months later, on receiving word that his wife was ill, although refused leave, he visited her anyway. On return he was tried and found guilty and finally dishonorably discharged on Feb. 24, 1931. His wife, on learning this, informed him by telegram that she would have nothing more to do with him. He returned home at once, patched up his domestic trouble, and obtained a less desirable job than he led his family to believe he had. On March 5, his wife had a stillborn child. Before this she had been very irritable. When informed of the child's death, he fainted. On March 29, he had a quarrel with his wife; that night he talked in his sleep. On March 30, he went to work as usual but did not return to his home.

Hypnosis failed to bring out more than fragments of the fugue. Sodium amytal given intravenously seemed equally inefficacious. After awaking on April 13 after the administration of sodium amytal, his mind seemed unusually clear, and he wrote the following story: On returning from work on March 30 with $72 he was "blackjacked" by two Negroes, after which he had a severe pain in his head. He poured water on his head from a pond nearby and tried to think things out. On searching his pockets he found his navy discharge papers; he then sought a recruiting officer to straighten out what he believed to be a mistake in these papers. He thought about many naval experiences, believing himself to be in the navy, but he gave no thought to his family. He wandered about, finally finding a recruiting officer who told him where he was; this he soon forgot. Continuing his wanderings, he picked up a golf ball on a course along the way, and the shell of a cartridge which a policeman had shot at a dog injured in an automobile accident. Arriving at H., he secured a job shoveling coal, working at this only long enough to earn $1.50. Finally he wandered to W., where his brother-in-law found him.

The patient gave a clear description of the whole fugue. He said his mind worked rapidly like a moving picture: There was no returning to thoughts that had gone by. The remainder of his stay in the hospital was uneventful. He repeated the same story several times, seemed somewhat overawed by his previous condition and was cheerful, pleasant and cooperative. As nearly as could be verified, the details he gave were correct. On April 18, he was discharged to his home.

CASE 2.—A middle-aged man was admitted to the psychiatric wards of the Albany Hospital on the evening of Sept. 3, 1932, by the police, who stated that he appeared at one of the stations and did not know who or where he was. From a receipt in his pocket, it was supposed his name was H. L. In his pockets were quantities of communistic literature.

The physical, neurologic and laboratory examinations gave essentially negative results. The patient was of asthenic habitus.

For the first forty-eight hours in the hospital the patient was quiet, seemed sleepy, gazed out of the window a great deal, held his head in his hands, and said that he had a headache. In response to questions about his home, birthplace, whether he had gone to school and whether he was single or married, he replied, "I don't know." When asked when he was born, he said, "1882." His refusal to eat necessitated feeding by tube. He slept fairly well; he dreamed, but no dreams were recorded. He remarked spontaneously about the beauty of the sunset. When asked to write his name, he made unintelligible scrawls and then wrote "cooperation, harmony, drift, reformation, transformation, elevation." When I asked why he wrote these, he said, "It's something that came across my mind." He then remarked that he saw things as if looking through a crystal; he could see numbers, balls and triangles, and these were symbols. He spoke much of numbers and their symbolic meaning, of the various periods of the universe, of ether, space, time, planetary movements and similar subjects. When alone, he also wrote several pages on such topics. When questioned, he closed his eyes to reply, the reason being that he received the answer from an "inner voice" within himself, and by looking, as it were, through a crystal. Mathematical calculations were done very well, and answers to questions of general information were given correctly.

During the second day, after being urgently pressed to eat by an intern, the patient said that his headache passed off and his mind became clear. He then gave a detailed account of his life. He was born in Norway. He had talked and walked in his sleep as a child, but had never had a convulsion. He attended school until 13½ years of age. He had been a sailor and had gone all over the world. He was a carpenter and yachting master, and had been married for twenty-six years and had eight children. He declared that his wife was mentally ill and that his home life was unhappy. Three years ago, the patient stated, he had had a similar attack of forgetfulness, which came on during a severe headache, and he had wandered from home. During the summer of 1932 his home had burned, and it was not adequately covered by insurance. To be an educated man and lead an ideal social life had been among his chief desires. His chief hobby had been reading books on sociology, psychology, philosophy, theosophy, religion, Christian science and similar subjects. He admitted using alcohol to excess at times, which made him feel like a "happy child." He stated that he had always been an open, friendly person.

His father had, in all probability, committed suicide. A sister had had a nervous breakdown. Two brothers are heavy drinkers.

The details of the fugue he explained in this way: He had gone from his home in K. to the home of his daughter in N. on September 2, and had retired with a severe headache. The next thing he knew he was in the hands of the police. He believed that the trip to Albany had been made by bus. Many details of his hospital care and treatment were recalled.

On September 8 he was discharged, returning to his home in a cheerful, happy state, cooperative and optimistic, believing that telepathy may be a factor in his case when he has a bad headache. A letter from the patient in April, 1933, indicates that he is well but much preoccupied with various symbolic designs to bring people together under one system of happiness, usefulness and enlightenment.

CASE 3.—A young woman was admitted to the psychiatric wards of the Albany Hospital on Dec. 31, 1932, by the Travelers' Aid because she could neither remember her name nor give information about herself. She had apparently arrived recently by bus. There were no identifying marks on her clothing or traveling bag.

Her physical and laboratory examinations revealed the following: She was a fairly well developed, well nourished young woman, with a large head, especially the frontal bosses. She was of asthenic habitus. The prominence of the lower ribs suggested the possibility of a past rachitis. Pregnancy of about three months' duration was found. The Wassermann reaction of the blood was negative. Periarteritis of the retinal vessels of the left eye was found. A cyst at the angle of the right jaw and three unerupted molars in the upper jaw were disclosed by roentgen examination. There were several carious teeth. The blood pressure was 104 systolic and 55 diastolic. The neurologic examination gave negative results objectively except for anesthesia and analgesia, which were found on the left side of the head above the left ear and extending nearly to the vertex of the skull. Corneal anesthesia was found on the left. A roentgenogram of the skull showed some irregular atrophic changes such as are usually seen in craniostenosis.

In the hospital the patient wept frequently and complained of pain in the left side of her head. There was occasional nausea and vomiting in the mornings. She ate poorly. On the first day she could give no account of herself whatsoever. She did not know the date. Perplexed and worried by her plight, she seemed to struggle to remember, scratching her head and presenting the appearance of being in deep thought. During the first night she awoke and stated that her name seemed to be P. H., that she was 25 years old, had been married since 1929, and had had a miscarriage a year before. She said that she had finished high school and had worked in an office. She spoke about San Francisco and Los Angeles, even mentioning streets and house numbers there, some of which were later verified. She spoke of a girl friend by the name of Jones, and of a sister. She spoke of her father, but it seemed to her that her mother had died several years previously. She seemed to recall vaguely coming with her husband late in 1932 by steamer through the Panama Canal to New York, where her husband had left her to make a trip to Africa. She intimated that she had been jealous of the attentions paid to her husband by another woman, S. T. She seemed to recall an accident on Hallowe'en night in which she was struck by an automobile and seriously injured. She thought she had been taken to a place, had been cared for by a nurse, and the people seemed strange to her. She had no idea how she had arrived in Albany. The same story was repeated many times, the patient always appearing as if grossly indifferent about it or in a reverie just before sleep. Hypnotism was tried once, with no success. She was given large doses of phenobarbital by mouth and sodium amytal intramuscularly to induce somnolence. It was hoped that by arousing her from such states and talking with her more information might be obtained. In such somnolent states she talked as if her father were present and gave some new information relative to her status as P. H. After awakening, she said she had had a vivid dream of being at home in California. Word association and free association studies gave no new information.

On January 10, she was told about her pregnancy. She showed some concern about it, but her general state was little changed.

On January 26 (twenty-seven days after admission), she fell to the floor, wept bitterly, and then declared that her name was J. M. She did not know the physicians and nurses whom P. H. had come to know. In the next few days she sometimes declared herself to be P. H. and sometimes J. M. As J. M. she gave the name of her sister, which was confirmed by long distance telephone. When her sister arrived in a few days she did not recognize her, but rapidly thereafter regained her memory for most of the events of her life.

From the sister we learned that J. M. was born in a southern seaboard state; that she is 20 years of age, single, and has never been in California. She had graduated from high school the summer before. She is one of a family of ten children; her father is living, but her mother had died of a "stroke" some years before. The patient's father and brother were so strict with her that life at home was not congenial. She had always been easy-going, friendly and unemotional, but had kept things to herself. As a child she had talked and walked in her sleep. She had not been known previously to have an amnesia, although her sister had known her to day-dream occasionally. Headaches had occurred in childhood, but there was no history of convulsions. About two months previous to admission, the patient had come to live with her sister in C. She had presumably secured a position in a distant city, B., and on December 29, at 1 p. m., had departed for that city by bus. On January 3, her sister had received mail from her with the B. postmark on it, telling of her safe arrival. The sister heard no more from her, and her supposed place of employment knew nothing of her. Her sister was about to broadcast for her when called by us.

After the patient's amnesia had cleared, she remembered her bus trip to B. It was during this trip that she had read a story in which P. H. appears as a character from California. She tried to get employment in B., but was unsuccessful and decided to return by bus to New York. Her memory could go no further than this.

On February 3, after being given 3¾ grains (0.2436 Gm.) of sodium amytal intramuscularly, she told the following story: On leaving the hotel in B., she declared that she was accosted by three men who took her purse and placed her in a car. Apparently this was the onset of the fugue, since after this she remembered very little until she found herself in the hospital in Albany as J. M. The story was repeated a number of times with only minor variations. She worried somewhat about the pregnancy, the details of which were explained in two different ways, causing some doubt as to the validity of her stories; one of these was that conception had taken place while asleep. Otherwise, she seemed to be in complete contact with her environment and past history, with the exception of the trip from B. to Albany, so far as could be verified. The anesthesia of the left side of the head and the cornea disappeared after she returned to her natural state. On February 5, she was discharged into the custody of her sister.

The outstanding features in the history of these patients were personal problems of considerable magnitude. Their childhood environments were none too congenial. There was history of severe headache in the early life of two of these patients. A history of convulsions was not elicited. Somnambulism and day-dreaming had been present in two cases, while talking in the sleep was common to all. All were of fairly open personality; all were of asthenic habitus. The school achievement of two could be regarded as somewhat subnormal. Two had followed earlier occupations in which travel and adventure are common. According to the history, the amnesic fugues of two patients were initiated by assault and that of the third by severe headache. While the amnesia for much of their past life disappeared in all of them, details of travel in the fugues of two remain somewhat obscure.

As viewed by laymen, fugues and amnesias savor strongly of malingering and prevarication. Amnesias are usually not complete even when they seem to be. In the most profound amnesia the patient fails to recognize the familiar; however, the forgetting of names and events implies earlier knowledge of them. The relation of such amnesias to cause and effect is difficult to understand. The language of the amnesia and fugue must be given broad interpretation all the way from slight implication to literalness. In the

amnesic state the behavior and personality of the patients were quite different from that of their normal state: this fact was recognized by the patients themselves.

Hypnosis in the cases reported here did not prove to be a better method of bringing about recovery of the amnesia than sedatives or narcotic drugs. Recovery is often sudden and spectacular. After apparent recovery, fragments of amnesia often persist. A complete review and assimilation of all the amnesic material by the patient is an essential in treatment. The relief from annoying personal problems possibly afforded by the amnesia is not negligible. Freud's contention that one tends to forget what is unpleasant to one may be especially apropos in "fuguers."

SUMMARY

1. A brief statement of the nomenclature of hysteria and fugues, together with definitions and synonyms, is given.

2. The relation of fugues to other diseases is presented briefly.

3. The outstanding literature bearing on the subject of fugues is reviewed.

4. Three patients with amnesic fugues are described in detail, giving the circumstances of onset and recovery, with treatment employed.

5. The features common to these patients were personal problems of a distressing nature, history of previous talking in sleep and uncongenial home environment. All were of asthenic habitus.

6. Narcosis with sodium amytal or similar drugs proved in my experience as effectual as hypnosis for invading the amnesia.

ABSTRACT OF DISCUSSION

DR. FREDERICK P. MOERSCH, Rochester, Minn.: I have been interested in fugues for some time and have divided the more common states of ambulatory automatism under the three headings of hysteria, epilepsy and migraine. The hysterical fugue is by all means the most common. At times it is exceedingly difficult to differentiate the hysterical fugue from the epileptic fugue. As a rule, the hysterical fugue is of longer duration, it occurs more frequently and the patients are less prone to periods of violence. At times it is almost impossible to make a differential diagnosis unless the patient is kept under observation for a prolonged period. Short fugues are often misinterpreted as petit mal equivalents. Some of these fugues are the result of focal cerebral lesions, and several of these patients later proved to have a brain tumor. Fugues associated with migraine, while rather rare, do occur and usually can be diagnosed from the history of preceding or associated migraine attacks. Two of Dr. Ziegler's patients had headaches, and I should like to ask him if it is possible that these patients might have had associated migraine. Dr. Ziegler stated that most of the fugues are hysterical, and I think that is correct. Most of these reactions are on an emotional basis, either conscious or subconscious, and at times it is difficult to be sure whether one is dealing with a conscious factor that is real or with a fictitious one. Not infrequently the medicolegal aspect and also the aspect of malingering enter into the question of fugues, and here again one has difficulty in differentiating the type of condition one is dealing with. I believe that the article by Hugh T. Patrick in 1907 on "Ambulatory Automatism" was the first paper in this country which distinctly brought out the fact that hysterical fugues were very common and that many fugues previously considered epileptic were really hysterical. Dr. Patrick stated that at times it is exceedingly difficult to distinguish the simulated from the real and to satisfy oneself that the case is one of disease and not of deviltry.

DR. GEORGE W. HALL, Chicago: I wish to emphasize the point Dr. Moersch brought out that these cases should not always be considered functional in character. Not long ago a minister announced from his pulpit that he had been preaching the wrong doctrine for a number of years and that he wanted to apologize and present his resignation. It came like thunder out of a clear sky to the congregation. In a few days it was found that he had to go down to see the fast mail train go through the small town where he lived. If his wife sent him to the store to buy several parcels, he would buy one parcel and bring it back, and then he would get another one and bring that back, and so on, until all the purchases were made. A few days after that he was missing from his home. About two weeks later he was found down in Alabama. His shoes were worn out, and his clothing was much worn. He went to a minister's house and told the minister who he was, asking him to telegraph his wife. A few months later a large tumor was found at autopsy, a glioma, filling one hemisphere and extending into the other. On another occasion I remember a brakeman, working on a coal car of the Illinois Central Railroad in Tennessee. He fell off the coal car. Three weeks later he was found walking into New Orleans with an entirely strange suit on. His hands were blistered and he had more money in his pocket than he had when he fell off the car. He knew nothing about what happened in the interval. One should keep in mind the possibility of organic brain disease in a certain percentage of these cases.

DR. EDWARD E. MAYER, Pittsburgh: The last paper recalls to my mind the twilight state or daemmerzustand of Kraepelin, which is often mistaken for a hysterical fugue. A partial lost identity and consequent wandering from home in a twilight state may follow fatigue or strain, accompanied by an evident toxic state. It may, however, be precipitated by an emotional situation. The mental confusion and only partial blotting out of identity should permit a differentiation from the hysterical fugues. I have several times testified in cases of daemmerzustand. On one occasion, a man committed bigamy in an unmistakable twilight state. In another, a patient was arrested for theft, committed during a fugue of this nature. I imagine all neurologists have become familiar with amnesia and a consequent fugue that occasionally follows the use of insulin. The clinical picture of hypoglycemia includes amnestic attacks that must be separated from hysterical fugues. Also, so-called psychic automatism due to glandular imbalance needs occasionally to be differentiated. It must, of course, always be kept in mind that fugues occur in the earliest stages of schizophrenia. Bourget has called attention to hebephrenic patients whose history reveals transitory fugues years in advance of actual psychotic symptoms. Often they were diagnosed as hysterical fugues. Hysteria is a term which, despite its antiquity, is used without a universal meaning being accepted for it. We know what it is but cannot explain or define it. I wonder whether some day neurologists will be able to analyze personality specifically aside from generalities like "flight from reality" and "protest and defense mechanism," so that we may distinguish schizophrenic and hysterical persons before they break down with an amnesia and a fugue. I recognize that a hysterical fugue is a reaction to an apparently unsurmountable obstacle, but why does the psychic conflict cause a fugue?

DR. THEODORE DILLER, Pittsburgh: About 300 years ago there was a famous witch finder in England by the name of Matthew Hopkins who traveled from county to county finding his witches. On his evidence something like 200 witches, or supposed witches, were convicted and executed in England. His method of detecting a witch was by means of a long needle, going over the body and ascertaining whether or not there were places that were insensitive or, as would be said today, anesthetic or analgesic. It was chiefly on this evidence that the witches were detected. I suspect, however, that a good many of those who showed anesthesia developed what would now be called the hysterical state on account of their accusation and the emotional upheaval that accompanied it. It is interesting to remember that in the great prevalence of witchcraft 300 years ago everybody believed it, including Sir Thomas Brown and Chief Justice Hales of England. The question of malingering is a very difficult one. Several years ago I had a patient who, I was convinced, was an instance of hysterical amnesia. But it was impossible to convince the legal authorities of this. I don't know of any way of doing it. I should

like to ask Dr. Ziegler to tell, if he can, how one can prove an instance of so-called hysterical amnesia, or fugue, to be the real thing and not faked.

DR. LLOYD H. ZIEGLER, Albany, N. Y.: I wish to state with regard to Dr. Moersch's question that two of the patients had severe periodic headaches which were considered possible migrainous attacks. The other patient apparently did not have much headache. I am glad Dr. Hall brought up the matter of patients with brain lesions, such as tumor, behaving in a manner similar to that I have described. In the extensive literature on this subject, fugues are described in association with many diseases, some of which may be rather serious intracranial lesions. I have seen patients who have been given insulin develop symptoms resembling a fugue. Patients with arteriosclerosis of the central nervous system may behave likewise. Careful scrutiny will usually reveal the difference between such patients and the type I have described. The importance of very thorough examination of the patient is apparent. I am grateful to Dr. Diller for embellishing the historical side of this subject. His question as to whether certain aspects of the fugue are real or imaginary raises a philosophic problem. Biologic facts do not have to be somatic to be real. To split the individual into "mental" and "physical" and to regard the physical as real and the mental as imaginary is fallacious. Lawyers and courts often view such matters from a vantage point so dissimilar from the physician's that it is difficult for them to understand each other. The education of lawyers to a biologic point of view is a task of major importance.

PELLAGRA

REVIEW OF CASES WITH SPECIAL REFERENCE TO THE GASTRIC SECRETIONS

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Recent studies in which particular attention has been given to the gastric secretions in pellagra are those of Givens,[1] Guthrie [2] and Boggs and Padget.[3] In addition, Bloomfield and Polland,[4] in a recent monograph on gastric anacidity, have tabulated the observations of several other authors whose studies were based on smaller series of cases. Givens[1] studied the gastric acid values following Ewald meal stimulation in 100 pellagrins, twenty-four of whom were children. Anacidity was found in 39 per cent of his cases, but its occurrence apparently bore no relationship either to age or sex or to the duration and recurrences of the disease. Guthrie,[2] in a larger series, found an absence of hydrochloric acid in 68.9 per cent and 62.8 per cent of all of his cases, and in 67.5 per cent of forty patients in whom histamine had been used as a stimulant to gastric secretion. In their report of 102 instances of pellagra, Boggs and Padget [3] state that achlorhydria was present in 90 per cent of the patients in whom gastric analysis was done. The method employed was not mentioned.

The long observed association between achlorhydria and pellagra has thus been definitely established. While these studies have served to clarify our understanding of the relationship, many of its important features remain obscure. It has been our purpose in this investigation to note the incidence of achlorhydria in pellagra, to observe particularly its association with the various clinical manifestations of that disease and to ascertain if in that relationship some factor or factors may exist which might influence its course or severity.

TABLE 1.—*Fundamental Data in One Hundred and Seven Cases*

	Number of Cases
Males	50
Females	57
White	94
Negro	13
Etiology:	
Dietary	77
Alcoholism	14
Pyloric obstruction	1
Undetermined	20
Distribution of dermatitis:	
Hands	102
Feet	58
Neck, face, chest, genitalia and buttocks	51
State of nutrition:	
Malnutrition	77
Normal	27
Unrecorded	3
Diarrhea	59
Normal bowel movement	29
Constipation	19
Recurrences	26

Observations have been confined strictly to those patients who presented the classic manifestations of pellagra. One hundred and seven cases have been so diagnosed and studied in the medical wards of the University of Virginia Hospital during the eighteen year period from 1915 to 1933. These patients were, for the most part, drawn from the rural districts of central piedmont Virginia. It is believed, therefore, that such a series offers an average picture of the disease as it is seen in the southern part of the United States. Of the 107 patients, 94 were white and 13 were Negroes, a ratio of eight to one, which decreased to two to one when corrected for the proportion of white to Negro admissions (four to one) at this hospital. In only fourteen cases was there a history of chronic alcoholism, a factor noted as more prominent in the reports of Shattuck,[5] of Boggs and Padget [3] and of Klauder and Winkelman.[6] Table 1 gives the important fundamental data regarding these patients; additional data are reserved for subsequent detailed analysis.

TABLE 2.—*Gastric Analyses (One Hundred and Seven Cases of Pellagra)*

Type of Meal	Free HCl Present		Free HCl Absent		Total	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
Ewald	16	29.1	39	70.9	55	100
Alcohol	7	50.0	7	50.0	14	100
Alcohol and histamine	7	18.0	31	82.0	38	100
Total cases	30	28.0	77	72.0	107	100

Seventy-two of these patients gave a history of a diet inadequate, particularly, in meat, fresh eggs, milk and fresh vegetables. In forty-six, or 43 per cent, the onset was between February and June, which agrees with the seasonal incidence reported by Boggs and Padget [3] and others. Complications occurred, but none were considered important from the standpoint of this

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1. Givens, M. H.: Chemical Analysis of the Stomach Contents from 100 Pellagrins, Am. J. M. Sc. **155:** 221 (Feb.) 1918.
2. Guthrie, J. B.: Achlorhydria in Pellagra, J. Trop Med. **35:** 71 (March 1) 1932.
3. Boggs, T. R., and Padget, Paul: Pellagra, Analysis of 102 Cases, Bull. Johns Hopkins Hosp. **50:** 21 (Jan.) 1932.
4. Bloomfield, A. L., and Polland, W. S.: Gastric Acidity: Its Relations to Disease, New York, Macmillan Company, 1933.
5. Shattuck, G. C.: Scurvy, Pellagra and Sprue at the Boston City Hospital, New England J. Med. **199:** 986 (Nov. 15) 1928.
6. Klauder, J. V., and Winkelman, N. W.: Pellagra Among Chronic Alcoholic Addicts, J. A. M. A. **90:** 364 (Feb. 4) 1928.

study. One gastric ulcer was the only recognized abnormality of the gastro-intestinal tract. Dermatitis was present in all cases. Without it, the diagnosis would be questionable.

In the early observations the Ewald test meal was used as a stimulant to gastric secretion. In this series fifty-five cases were studied by this method. Later, 90 cc. of 7 per cent alcohol with phenolphthalein served as a test meal in fourteen patients; more recently, histamine injections in doses of from 0.5 to 1 mg. subcutaneously have been used subsequent to alcohol meals in thirty-eight patients.

Table 2 represents the results of gastric analyses in the whole series according to the method used. The percentage of patients showing no free hydrochloric acid approximates the figures of Guthrie [2] and others and is much higher than that reported by Givens.[1] The low percentage obtained by Givens may be attributed to the fact that his series included a number of children and young adults. The use of histamine did not materially change the anacidity percentage, suggesting that a "true" anacidity quite frequently exists in pellagra.

The recent work of Polland [7] on normal individuals shows the necessity for taking age into account in relation to the gastric secretions. He shows that the percentage of normal individuals having anacidity

TABLE 3.—*Correlation of Gastric Analysis and Age and Sex*

	Free HCl Present				Free HCl Absent			
Age	10 to 40		40 to 80		10 to 40		40 to 80	
Type of Meal / Sex*	♂	♀	♂	♀	♂	♀	♂	♀
Ewald	3	3	8	2	5	10	12	12
Alcohol	2	0	4	1	0	2	1	4
Alcohol and histamine	1	4	1	1	2	7	14	8
Total cases	6	7	13	4	7	19	27	24
Total cases, both sexes	13		17		26		51	

* In these tables, ♂ indicates male; ♀, female.

increases with age, from 2.9 per cent in men and 4.7 per cent in women in the age period 20-29 years to 28.6 per cent in men and 28.6 per cent in women over 70 years of age, an abrupt increase occurring about middle-life. With these factors in mind, we analyzed this series according to Polland's table, in order to bring out the differences between the cases occurring in the first and in the last half of life.

In thirty-nine patients under 40 years of age, twenty-six, or 66⅔ per cent, showed an absence of free hydrochloric acid. From Polland's data on normal individuals, only about 4.5 per cent would have been expected to show this sign. In sixty-eight patients over 40 years of age, fifty-one, or 75 per cent, had no free hydrochloric acid. About 21 per cent of normal or average individuals during this period of life may be expected to have anacidity. There is, therefore, among pellagrins a definite excess of individuals with an absence of free hydrochloric acid. The difference in figures cited by various authors may be in part explained by different age compositions.

If, in addition, there were included the patients with a partial but not complete suppression of free acid, using the arbitrary figure of 18 adopted by Givens [1] and Guthrie [2] as indicating deficient acid, then 13 more of the 107 patients would be added to the 77 showing less than normal secretion.

7. Polland, W. S., quoted by Bloomfield and Polland.[4]

To determine whether loss of ability to secrete free hydrochloric acid is temporary or permanent, the gastric analyses were repeated in twenty-one cases several months to years after the initial observation. The results are shown in table 4.

In most cases the original admission was for pellagra. A number of patients returned later with a recurrence or in response to a follow-up letter. In some instances the patient had been admitted to the hospital for another

TABLE 4.—*Repeated Gastric Analyses*

Sex	Age	Date	Free HCl	Type of Meal	Comment
		Free HCl Present—Later Free HCl			
♂	54	8/19/28	28	E	Pellagra
		5/19/33	49	E	No active pellagra
♂	50	5/29/27	47	E	Pellagra
		3/17/33	30	A	No active pellagra
♂	23	8/ 2/24	10	E	Pulmonary tuberculosis
		9/21/26	45	E	Pellagra
♂	59	4/ 8/23	30	E	Alcoholism and syphilis
		7/18/23	13	E	Gastritis and syphilis
		1/ 4/26	12	E	Sciatica
		4/ 1/27	19	E	Pellagra
		Free HCl Present—Later No Free HCl			
♂	56	6/12/21	20	E	Pellagra
		5/ 9/22	0	E	Pellagra
		5/23/22	0	E	Pellagra
♀	38	6/23/30	20	A & H	Pellagra
		8/ 6/30	0	A & H	Pellagra
♀	44	7/27/28	15	E	Pellagra
		6/ 5/30	0	A	Pellagra
♂	23	3/18/32	9	A & H	Pellagra
		5/24/33	0	A & H	No active pellagra; attack March, 1933
		No Free HCl Present—Later No Free HCl			
♂	53	5/25/21	0	E	Chronic gastritis
		6/23/22	0	E	Pellagra
♀	35	6/ 2/21	0	E	No disease
		4/16/31	0	A & H	Pellagra
♀	38	11/30/29	0	E	Pellagra
		4/20/32	0	A & H	No pellagra
		3/18/33	0	A & H	Mild pellagra
♀	42	3/24/22	0	E	Chronic gastritis
		5/ 1/23	0	E	Pellagra
♂	30	3/29/22	0	E	Pellagra
		2/19/30	0	E	Pellagra
		5/12/33	0	A & H	No pellagra
♀	54	7/31/26	0	E	Pellagra
		7/ 2/29	0	E	Pellagra
♀	27	7/23/30	0	A & H	Pellagra
		9/12/31	0	A & H	Psychosis, later postero-lateral sclerosis
		5/25/33	0	A & H	No pellagra
♂	60	7/24/31	0	A & H	Pellagra
		5/24/33	0	A & H	No pellagra
♀	59	5/21/31	0	A & H	Pellagra
		5/31/33	0	H	Pellagra
		No Free HCl—Later Free HCl			
♂	48	4/15/25	0	E	Pellagra
		4/27/26	0	E	Pellagra
		10/14/26	20	E	Pellagra
		3/22/28	0	E	Pellagra
♂	55	8/16/28	0	E	Pellagra
		9/21/28	0	E	Pellagra
		3/19/29	50	E	No pellagra
♀	27	7/ 1/29	0	E	Pellagra
		5/ 8/33	15	A & H	No pellagra
♀	36	10/ 2/28	0	E	Pellagra
		5/24/33	12	A & H	No active pellagra; attack March, 1933

complaint before the onset of pellagra. The observations in table 4 suggest that the anacidity of pellagra may be temporary or permanent. While the latter group was larger in this series, there were several patients who on a later test were found to give reasonably normal results. It would appear, therefore, that either a "false" or a "true" anacidity may be present in this disease.

In six of nine instances there was apparently a permanent loss of the ability to secrete free hydrochloric acid, as determined by the alcohol and histamine tests. No case in which the original test made with histamine showed an absence of free hydrochloric acid

showed acid on subsequent examination, but possibly this may occur.

Diarrhea is frequently encountered in pellagra. Guthrie [2] has suggested that it is more frequent in patients having no free hydrochloric acid. Stomatitis is also a common symptom and is frequently associated with diarrhea. In tables 5 and 6, stomatitis, diarrhea and the analyses of the stomach contents are correlated.

TABLE 5.—*Correlation of Gastric Analysis and Diarrhea*

	Diarrhea Present		Diarrhea Absent		Total	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
Free HCl present	14	46.0	16	54.0	30	100
Free HCl absent	45	58.4	32	42.6	77	100
Total cases	59	55.2	48	44.8	107	100

It will be seen that diarrhea was present in 58.4 per cent of the patients with achlorhydria and in 46.6 per cent with free hydrochloric acid. These figures correspond quite closely to those of Guthrie.[2] It seems obvious, then, that diarrhea is not necessarily dependent on an absence of free hydrochloric acid. Stomatitis, which is another manifestation of involvement of the gastro-intestinal tract, might logically be expected to be correlated with the anacidity, but the results given in table 6 show definitely that this is not necessarily true.

In table 7 the gastric analyses are correlated with the signs and symptoms of lesions in the brain and nervous system. As the pathology of pellagra is more intensively studied, the frequency of lesions in the brain, spinal cord, and peripheral and autonomic nervous system is emphasized. The lesions found are similar to those found in pernicious anemia, sprue and

TABLE 6.—*Correlation of Gastric Analysis and Stomatitis*

	Stomatitis Present		Stomatitis Absent		Total	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
Free HCl present	15	50.0	15	50.0	30	100
Free HCl absent	43	55.8	34	44.2	77	100
Total cases	58		49		107	

posterolateral sclerosis associated with gastric anacidity alone, according to Gildea, Kattwinkel and Castle.[8] The lesion is degenerative in type and attacks the posterior and lateral columns of the spinal cord most frequently. Grinker [9] emphasizes the rarity of this lesion in patients having free hydrochloric acid in the stomach contents. It should be noted in table 7 that signs suggestive of posterolateral degeneration (exaggerated reflexes, diminished or absent reflexes, ankle and patellar clonus, positive Babinski sign, paresthesia and ataxia) are found a little more frequently in the patients having no free hydrochloric acid. Nevertheless, it is apparent that the signs and symptoms of cord involvement may also occur when free hydrochloric acid is present in the stomach contents. A careful history will usually show the earliest symptoms to be burning, with numbness and tingling in the hands and feet. These may be felt a week or more before the dermatitis appears. This suggests that the earliest lesion occurs in the peripheral nervous system, a point also made by Lynch.[10]

Contributions to the knowledge of pernicious anemia have stimulated the investigation of anacidity in its relationship to anemia in general, particularly of late to the hypochromic type. In table 8 the gastric analyses are correlated with hemoglobin and erythrocyte determinations.

Sixteen of the twenty-four patients so analyzed, or 66⅔ per cent of those showing free hydrochloric acid in the stomach contents, have no anemia, while forty-six of the sixty-one patients, 77 per cent, with no free hydrochloric acid have normal erythrocyte counts and hemoglobin, thus indicating that as far as this series is concerned the lack of free acid does not predispose to anemia. There is a slight preponderance of females in the group having no free hydrochloric acid, but it is not thought to be significant. It is striking that pellagra rarely leads to severe anemia, although it is frequently associated with anacidity. The suggestion has been made that because of this anacidity and of the similarity

TABLE 7.—*Correlation of Gastric Analysis with Symptoms and Signs of Lesions in the Brain and Nervous System*

	Cord Symptoms				Mental Symptoms			
	Present		Absent		Present		Absent	
	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent
Free HCl present	13	54	11	46	10	41	14	59
Free HCl absent	38	63	22	37	22	37	38	63
Total cases	51		33		32		52	

of many signs and symptoms, a relationship between this disease and pernicious anemia may exist. Spies and Payne,[11] however, have shown that the gastric juice of a pellagrin, containing no free hydrochloric acid, when incubated with beef, is capable of eliciting a characteristic reticulocyte response in pernicious anemia. Therefore, it would appear that the absence of remarkable changes in the red count and hemoglobin in pellagra associated with the anacidity further divorces the two conditions.

Twenty-six patients gave a history of from one to eleven recurrences, and four had had symptoms persisting for periods of from four months to two years. Only eight of these had free hydrochloric acid. In two of the eight the acid was present on the first admission but subsequently disappeared. In two others the free hydrochloric acid was present only once in several analyses, thus leaving four cases showing persistent acid. Thirteen of the patients died while under treatment in the hospital. Of these eleven had no free hydrochloric acid, and one other responded only after

TABLE 8.—*Correlation of Gastric Analysis and Anemia*

Red blood cells	4 M plus		3 to 4 M		2 to 3 M	
Average hemoglobin	80	79.5	73	68	55	56
Sex	♂	♀	♂	♀	♂	♀
Free HCl present	10	6	4	2	0	2
Free HCl absent	20	26	5	7	1	2
Total cases	30	32	9	9	1	4

8. Gildea, E. F.; Kattwinkel, E. E., and Castle, W. B.: Experimental Combined System Disease, New England J. Med. **202**: 523 (March 13) 1930.

9. Grinker, R. R.: Pernicious Anemia, Achylia Gastrica, Combined Cord Degeneration and Their Relationships, Arch. Int. Med. **38**: 202 (Sept.) 1926.

10. Lynch, K. M.: Structural Changes in Pellagra, J. South Carolina M. A. **28**: 202 (Aug.) 1932.

11. Spies, T. D., and Payne, Warren: A Study of the Etiological Relationship Between Pellagra and Pernicious Anemia, J. Clin. Investigation **12**: 229 (Jan.) 1933.

histamine stimulation. In this series it would appear that an absence of free hydrochloric acid indicated a more severe prognosis in relation to recurrence and death.

SUMMARY

The results of gastric analyses in 107 typical endemic cases of pellagra admitted to the University of Virginia Hospital during the past eighteen years confirm the results found by previous observers in regard to the common occurrence of achlorhydria in this disease, even after due allowance has been made for the presence of this condition in normal persons of different ages. The examination of some patients indicated that this condition might be more or less permanent (true anacidity), but in a few instances some degree of normal function returned. The assumption, however, that the presence of achlorhydria was necessarily correlated with such other manifestations as stomatitis, diarrhea, involvement of the central nervous system and anemia was not borne out by this study. There is no implication that achlorhydria is a primary or uniformly antecedent manifestation of this deficiency disease syndrome.

ABSTRACT OF DISCUSSION

DR. T. D. SPIES, Cleveland: It has been known for some time that achlorhydria is associated with pellagra, and now Dr. Mulholland demonstrates for the first time that this effect is likely to be permanent. My own observations confirm and support his studies. I believe that the lasting, permanent changes found in the gastric juice result from atrophy of the gastric glands. While studying the relationship of pellagra to pernicious anemia, my associates and I showed that pellagrins have the intrinsic factor in their gastric juice which Castle has shown to be absent in the gastric contents of patients with pernicious anemia. In addition, when pellagrins with achylia go back to their original habitat, they do not develop either pernicious anemia or pellagra if their diet is adequate. It is my impression that pellagra, sprue and other similar conditions are probably closely related in that their development may be dependent on an inadequate food intake or assimilation. It is difficult to draw any definite conclusions as to the exact chemical substances concerned in the pathogenesis of these diseases when the greatest investigators of anemia and pellagra have chosen to speak of autoclaved yeast and other foodstuffs as a specific vitamin. Autoclaved yeast contains many essential proteins, fats, carbohydrates and minerals and, according to my own belief and that of others, several accessory food substances and not just one, as the term vitamin B_1 or G might connote. With Dr. Mulholland's observations in mind, I should again like to say that this work is of fundamental importance.

DR. W. H. SEBRELL, JR., Washington, D. C.: Dr. Mulholland has presented an interesting study of achlorhydria in pellagra. More clinical studies on pellagra, such as this, are needed, instead of so many presentations of opinions about the etiology, with little or no proof to support them. The studies of Goldberger and his associates have conclusively proved that pellagra is due to a faulty diet. Experience in treatment indicates that success depends directly on the extent to which a proper diet is used. The physician who puts his faith in the pharmacopeia for his treatment of pellagra will be sadly disappointed. In fourteen of Dr. Mulholland's patients, alcohol is given as a factor in the etiology. Many reports of sporadic cases of pellagra give a history of alcoholism, although this is certainly not a factor in endemic pellagra. In connection with alcoholism and pellagra, the old term pseudopellagra has recently reappeared in the literature. While this term probably includes other conditions, that is, cases of missed diagnosis, it also undoubtedly includes many cases of true pellagra. There is no longer any excuse for the use of the term pseudopellagra. Dr. Mulholland had thirteen deaths in his series, a death rate of about 12 per cent. Many of the older reports in the literature give death rates of 30 per cent and over, probably because the more severely affected patients go to the hospitals and proper dietetic treatment was unknown. Goldberger found that the death rate of the endemic disease did not exceed 3 per cent. He also made the interesting observation that the disease is predominantly a disease of childhood between the ages of 2 and 15 years. This does not show up in hospital reports, probably because of the relative mildness of the disease in children. From the point of view of preventive medicine, the outlook in pellagra at present is favorable. The depression has caused a considerable increase in the home production of foods in the cotton belt, where about 90 per cent of the pellagra in this country occurs. The reported case rate in Mississippi has fallen from 774.8 per hundred thousand in 1928 to 288.2 in 1932, and it may be safely predicted that as long as the production of food crops continues in this area the incidence of pellagra will continue to be very low.

DR. JAMES S. MCLESTER, Birmingham, Ala: The last word in pellagra has not yet been said. I am thoroughly familiar with the splendid pioneer work done by Dr. Goldberger but those of us in the South who treat pellagra feel that in its causation there is operative some factor or factors other than deficient diet. We can assume, as did Dr. Goldberger, that, in a certain number of patients at least, pellagra is due to the failure of the diet to provide some important factor. It is not possible, however, that in other cases, accompanying the achlorhydria, there is some underlying defect in the digestive apparatus, which defect, as was pointed out by Castle, prevents the patient from securing from his food some necessary substance, and that the lack of this substance produces pellagra?

DR. FRANK SMITHIES, Chicago: The diet that is supposed to cause pellagra is not an acid secretion-stimulating diet. In the instances of pellagra that I have seen it seemed that, in general, the cases that showed a persistent deficiency of gastric acid secretion ran in close parallel to their exhibiting definite central or cord damage. Dr. Mulholland's figures, which are similar to mine, indicate that, in the group of cord cases, histamine apparently had little if any effect toward producing gastric acid secretion. In Bakin's studies, in which histamine-like effects were brought about in the secretion of acid gastric juice, pepsin frequently was as low as one twentieth of the normal quantity. On the other hand, when gastric secretion follows stimulation by the "end-products" of protein digestion themselves, a gastric secretion low in hydrochloric acid but high in its quantity of pepsin is secured. It is apparent that in pellagra as well as in other forms of "deficiency" diseases associated with low hydrochloric acid secretion and anemia, one must pay more attention than heretofore to the quantitative estimation of hydrochloric acid and of pepsin in gastric secretion. In all probability such quantitative variations explain why pellagra patients may be put on a full diet of mixed foods and do well, digestively, provided they do not exhibit extensive damage of the central nervous system. In the presence of large volumes of pepsin, apparently very low ratios of hydrochloric acid admit of good digestive function. I long ago abandoned the Ewald meal and its variants and the alcohol test. Such "meals" are not real foods and cannot excite the real food responses. In fact, the Ewald meal is the type of meal on which the pellagra patient has lived during the period in which he acquired pellagra; namely, a carbohydrate nonacid-stimulating meal. Such a meal remains in the stomach a short time and has little value as an acid excitant. If one gives a pellagrin a full meal of mixed foods, and fractionally, every quarter of an hour, over a full digestive phase of four hours, removes specimens for analysis, one will be surprised to note that during the first two hours, while low or practically no hydrochloric acid secretion occurs, after that period acid secretion is abundant and patients who on Ewald or alcohol meals had, at an hour's time interval, been classed as instances of achlorhydria, exhibit satisfactory or even normal hydrochloric acid secretion and good peptic values.

DR. A. L. LEVIN, New Orleans: In the last seven years I have made a special study and observations proving that there is a definite relationship between liver and the hydrochloric acid production in the stomach; in other words, that the liver holds the control key to the production of hydrochloric acid. My studies included cases of chronic cholecystitis, biliary cirrhosis, polyarticular rheumatism, pellagra, sprue and pernicious

anemia; in fact, my observations were made on any disease associated with achlorhydria. When these patients are treated with liver extract, as in pernicious anemia, the hydrochloric acid quite often returns to normal. It is known that liver substance influences the hematopoietic system. It has also been proved that stomach tissue or gastric secretion has an influence on the hematopoietic system. My clinical observations lead me to believe that liver substance influences the production of hydrochloric acid. Thus there is a triangle—liver, stomach and hematopoietic system. Under normal conditions, the relationship between the three systems is perfect. Certain diseases, among them pellagra, often disturb that relationship and the result is lack of hydrochloric acid and a disturbance in the formation of blood. Where this disturbance originates and which is affected first is not known as yet. I wish to call the attention of physiologists in order to initiate a careful study of this relationship. I would advise Dr. Mulholland to treat his pellagra cases with liver extract and observe its influence on the hydrochloric acid. The liver treatment must be carried on sometimes for several months before either satisfactory results are obtained or failure indicates atrophy of the peptic glands.

DR. H. B. MULHOLLAND, University, Va.: I regret that I have only twenty-one cases in which gastric analyses have been repeated. It is very difficult to get these people to come back, as the majority of them live in the mountains. Unless one has money enough to hire a nurse for a month to bring them in a car, it is almost impossible to make follow-up examinations. However, I intend to continue this study with special reference to this feature and endeavor to determine the permanence of anacidity. In the hospital recently was one of the most severe cases that I have seen of involvement of the central and peripheral nervous system, presenting extensive skin lesions, stomatitis, diarrhea and mental symptoms. The patient had paresthesia, hyperactive reflexes, ankle clonus and a positive Babinski reflex. He had, nevertheless, about 68 degrees of free hydrochloric acid in the stomach on repeated gastric analyses. Patients may have marked changes in the nervous system and free hydrochloric acid in the stomach contents. These signs of nervous system involvement may disappear as the general condition picks up. I agree with Dr. Smithies in that I do not think the Ewald test meal or the alcohol test meal is a good stimulant for gastric secretion, and I am now using histamine alone. Dr. Levine referred to the use of liver in cases showing no acid. I would say that I now treat these cases with an aqueous extract of liver, but I have not used the whole liver substance. It is felt that aqueous extract of liver is much more efficacious than yeast, producing a more rapid clinical improvement; but this is only a clinical observation. In one or two such patients I have repeated the gastric analyses, and I am quite sure that at least one has shown a permanent lack of free hydrochloric acid.

The Hemolytic Anemias.—The most important group of hemolytic anemias is constituted by those of congenital or familial origin: acholuric family jaundice, sickle-cell anemia, the erythroblastic anemia of infants, and icterus gravis neonatorum. . . . Acholuric jaundice and sickle-cell anemia are dependent on the presence of an abnormal type of corpuscle, which is ill adapted to life in the blood stream, but the factors which determine the degree and the variations in hemolysis are obscure. The pathology of the erythroblastic anemia of infants is unknown. Icterus gravis neonatorum is a most interesting disease, which may shed light on the mechanism of the acute anemic breakdowns of later life and which therefore deserves rather longer mention. In this grave familial jaundice successive infants in a family become jaundiced a few hours to a day after birth. They become progressively anemic, pass into a drowsy condition, and usually die in a few days or weeks. The disease resembles physiological jaundice on its onset, and, like it, it does not show any gross postmortem appearances to account for the jaundice. During intra-uterine life the red cells circulate in higher concentration than after birth to compensate for the poor supply of oxygen from the placenta. It is probable that physiological jaundice results from the hemolysis of superfluous corpuscles on the adoption of pulmonary respiration, and that grave familial jaundice is a morbid exaggeration of this process.—Witts, L. J.: The Pathology and Treatment of Anemia, *Lancet* **1**:601 (March 19) 1932.

THE CLINICAL MANIFESTATIONS OF SILICOSIS

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Comments on the clinical manifestations of silicosis as reported in this paper are based on a study [1] carried out among 7,722 men employed as miners in the Picher District of Oklahoma. This work was done during the year 1928 by officers of the United States Bureau of Mines and the United States Public Health Service, in cooperation with the Metropolitan Life Insurance Company and the mine operators' association. In commenting on the similarity of these observations to those noted by Dr. Irvine and his associates in their study of the silicosis problem in South Africa, it will be recalled that Irvine [2] summarized, in his report to the international conference held in Johannesburg in 1930, the results of the important work done by that group of investigators.

The disease has been divided, both in South Africa and in the United States, into two classes: simple silicosis and silicosis plus tuberculosis, or tuberculosis with silicosis. Simple silicosis is further divided (for convenience of description and possible compensation purposes) into three stages: first, second and third stage silicosis. In South Africa and in Ontario they are defined by law as anteprimary, primary and secondary.

If by clinical manifestations is meant those factors that can be ascertained from the individual having the disease, one may include the personal data, the past history of diseases, occupation, present history, physical examination and roentgen and laboratory observations. In this symposium at least a portion of these, notably the roentgen observations, will be discussed in other papers.

The Committee on Pneumonoconiosis of the Industrial Hygiene Section of the American Public Health Association has given the following statement in regard to the stages of this disease:

First Stage (corresponds to anteprimary stage of South Africa).—The symptoms of uncomplicated first-stage silicosis are few and often indefinite. The man may apparently be quite well and his working capacity not noticeably impaired. Slight shortness of breath on exertion and some unproductive cough, often with recurrent colds, are the most usual symptoms. The man may have a little less ability to expand his chest than formerly and the elasticity of the chest may be slightly impaired. The earliest specific indication of the presence of silicosis is the radiographic appearance, consisting of generalized arborization throughout both lung fields with more or less small, discrete mottling.

This characteristic mottling is due to shadows cast by the discrete individual nodules of fibrous tissue in the lungs and is essential to the diagnosis of silicosis; without this finding the diagnosis of silicosis is not sustained except by autopsy.

A report [3] on silicosis made in 1925 contains a statement that no nationality is exempt and that all races are susceptible, and that age in itself is probably no great factor in the prevalence of this disease.

Read before the Section on Preventive and Industrial Medicine and Public Health at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 14, 1933.

1. Sayers, R. R.; Meriwether, F. V.; Lanza, A. J., and Adams, W. W.: Silicosis and Tuberculosis Among Miners of the Tri-State District of Oklahoma, Kansas and Missouri: I, technical paper 545, U. S. Bureau of Mines.
2. Irvine, L. J.: Report upon the Work of the Miners' Phthisis Medical Bureau for the Year Ended July 31, 1928, Pretoria, Union of South Africa, Government Printing and Stationery Office, 1929, p. 51.
3. Sayers, R. R.: Silicosis Among Miners, technical paper 372, Bureau of Mines.

In the report for 1928, Irvine is quoted as saying that "0.83 per cent had silicosis at 30 to 35 years of age, 2.61 per cent at 34 to 37 years, 3.34 per cent at 38 to 41 years, 3.77 per cent at 42 to 45 years, and 3.51 per cent at over 46 years." The work in the Picher District indicated that 10.3 per cent of the miners between 20 and 29 years of age had silicosis, 32.2 per cent between 30 and 39 years, and 37.8 per cent between 40 and 49 years. Tabulation of the ages from 35 to 45 showed that the rise in the 30 to 39 group occurred largely between 35 and 40 years. This was thought to be due to the length of service underground by this group of men. Tabulation of the men entering the mines under 20 years of age shows that 20.3 per cent ultimately developed silicosis; of those entering from 20 to 29 years of age, 20.8 per cent developed silicosis; from 30 to 39, 24.1 per cent developed silicosis; and from 40 to 49, 24.7 per cent developed silicosis. All men with first-stage silicosis worked an average of 13.0 years, but those starting in the mines after 40 worked an average of only 7.8 years.

In the history of past illness in the study of 7,722 men examined at the Picher Clinic, it was found that there was no correlation between silicosis and past diseases, although diphtheria, scarlet fever and malaria were reported more frequently by those having silicosis. Tonsillitis, especially if the attacks were recurrent, seemed to be associated with tuberculosis but apparently had no relation to silicosis. According to Irvine, it is the belief of the investigators in South Africa that "it remains true to say that we should not think of 'simple' silicosis merely as a dust fibrosis, but as being, at least in many cases, a dust fibrosis which, from its beginning as a clinically detectable condition, is linked up with an element of latent tuberculous infection."

It was noted that shortness of breath was generally recognized as a cardinal symptom of silicosis. Of the 7,722 men examined at Picher, the following incidence of admitted shortness of breath was found: among men essentially negative for silicosis, 10.2; among those with first-stage silicosis, 18.4.

Irvine states that there is some amount of irritating cough, typically a dry cough with little or no expectoration, often worst in the morning and sometimes inducing vomiting. In the group at the Picher Clinic, a cough was frequently admitted among silicotic patients, and was generally nonproductive. In the essentially negative also, however, the symptom was admitted in 13.9 per cent of the cases. In first-stage silicosis the percentage was 18.2.

Expectoration, hemoptysis and night sweats were slightly increased in the first stage of silicosis but probably were indicative of infection. The hemoptysis admitted was probably due, at least in part, to the method of asking the question: "Do you cough up blood?" In some cases this was due to nasal catarrh.

Loss of strength was admitted in 3.5 per cent of the negative individuals and 6.4 of the first stage. Loss of appetite was admitted in 1.9 per cent of the essentially negative and 3.3 per cent of the first stage. Other pronounced symptoms in advanced cases of silicosis are constipation, epigastric discomfort and other vague complaints, which the men termed "indigestion." The causes of the gastro-intestinal symptoms were not ascertained.

In the group of men under discussion, those having first stage silicosis usually appeared to be in robust health. The chest musculature, in particular, stands well out and the shoulders are held well back. There are usually no marked symptoms of ill health, such as paleness or loss of subcutaneous fat. The average weight of the essentially negative individual was 143 pounds (65 Kg.), and of those in the first stage of silicosis, 147 pounds (66.7 Kg.). The observations on the blood pressure of the men showed that it tended to remain normal or increase somewhat in silicotic patients. Any persistent, marked drop in the blood pressure of silicotic patients probably indicates a tuberculous infection.

Irvine [2] states that:

> The conformation of the chest usually shows little or no alteration, although the upper chest may show some flattening. The percussion note is typically of average normal quality. The practically constant clinical signs are:
>
> 1. A certain lack of elasticity of the chest wall during the movements of respiration, together with
> 2. A somewhat reduced air entry, and
> 3. A characteristic alteration of the inspiratory murmur from the normal "vesicular" character to a higher pitched or "harshened," "thinned" and commonly somewhat shortened type, the expiratory murmur, although somewhat prolonged, remaining fainter than the inspiratory.
>
> This type of breath sound is very characteristic, with some modifications, of silicosis in all its stages, and this clinical sign has also the significant character of more or less complete generalization. It is first noticeable at the anterior, lateral and basal regions.
>
> In a minority of cases, however, the breath sounds may be simply diminished, but breath sounds which are simply diminished or which, on the other hand, are merely somewhat louder or more "pronounced" than normal are not specially characteristic of silicosis.
>
> Usually there are no accompaniments, but a stray rhonchus may be heard here and there.
>
> This complex of physical signs is almost constantly present in cases of a slight degree of "simple" silicosis. The cough may be put down to the coincident bronchitis and bronchiolitis, the recurrent pains to slight intercurrent local pleurisies.

In the group under discussion, the changes in physical signs in the chest conformed generally to Irvine's statement, in that they are not definite in most cases of first stage silicosis. Retractions in the early stages showed some rise over those of the essentially negative—from 6.3 to 8.9 per cent. The retractions were located in the lower sternal, suprasternal, supraclavicular and infraclavicular regions. The percentage of any one type of retraction is very small and was not of value as a diagnostic sign. It is generally accepted that a cardinal physical finding in silicosis is diminished chest expansion. Emphasis should not be put on the chest expansion found but rather on the importance of the comparison with the man's chest expansion found in early examinations. The average chest expansion for the essentially negative was 3.2 inches; in the first stage of silicosis it was 3.0 inches.

The observations mentioned by Irvine regarding the limited extent of chest movements were present in the Picher group. The chest seemed to fail to return to the normal expiratory position. The elasticity of the normal chest seemed to be diminished.

On auscultation there is an increase in the number of men having harshened breath sounds in the first stages of silicosis. Râles, when heard, were more frequently in first stage silicosis and usually at the bases of the lungs.

Second Stage.—In the second stage of silicosis, which corresponds to the primary stage of South Africa, a definite shortness of breath on exertion is usually found, and pains in the chest are a frequent complaint. A dry morning cough is often present, sometimes with

vomiting, and recurrent colds are more frequent. Even then the man's appearance may be healthy but he is dyspneic on exertion, he cannot work as well as formerly and his chest expansion is noticeably decreased, the movement being sluggish and diminished in elasticity.

The characteristic roentgenographic appearance is a generalized medium-sized mottling throughout both lung fields. The shadows of the individual nodules are for the most part discrete and well defined on a background of fibrous arborization, but there may be here and there larger but limited opacities due to irregular pleural thickening or to a localized aggregation of nodules.

Irvine states that in a definitely established degree of simple silicosis the radiographic and clinical signs are very distinctive. Among the men in the present study, shortness of breath was found in 30 per cent of those with second stage silicosis, as compared with 10 per cent in the essentially negative. Cough was present in 23 per cent, as compared with 14 per cent in the essentially negative. Expectoration was admitted three times as frequently in this stage as among the negative and hemoptysis more than five times, night sweats more than four times, and loss of weight more than three times. Gastro-intestinal symptoms were about three times as frequent in this group as in the essentially negative. In other words, all these symptoms increased materially in this stage of silicosis over the essentially negative or over the previous stage.

Subjective Symptoms of Silicosis

Degree of Silicosis	Dyspnea	Cough	Expectoration	Hemoptysis	Night Sweats	Loss of Strength	Loss of Appetite
Essentially negative	10.2	13.9	0.9	1.0	0.9	3.5	1.9
First stage silicosis.....	18.4	18.2	1.0	2.0	1.3	6.4	3.3
Second stage silicosis.....	30.8	23.3	3.2	5.5	4.3	11.8	5.9
Third stage silicosis.....	43.7	34.4	3.1	0.0	3.1	25.0	6.2
Silicosis with tuberculosis...	44.2	42.0	3.7	11.2	6.0	24.0	12.4
Uncomplicated tuberculosis..	....*	44.2	7.7	17.5	9.6	29.8	14.4

* Not stated.

The South African workers have stated [4] that the clinical examination in simple silicosis in this stage shows a corresponding advance on the conditions found of the early stage. The man is of robust type, well nourished and not infrequently above normal weight. The upper part of the chest is typically "smoothly" flattened or "sloping" but not markedly retracted as in chronic tuberculosis. The character of the chest movement is modified in quality, sluggish and lacking in elasticity; and there may be some reduction in the range of movement. The percussion note is somewhat flattened without being definitely dull, especially posteriorly. Breath sounds have more definite, characteristic thinning and harshening of inspiration, the expiration being longer and fainter. The cough is dry and irritating in character. There is definite impairment of working capacity.

Among the group under observation in the work at Picher, the men in general appeared to be in better health than those of the essentially negative group, the average weight of those having second stage silicosis being a little more than 149 pounds (67.6 Kg.), or an increase of about 5 pounds (2.3 Kg.) over the average of the negative group. There was a slight decrease in chest expansion; but, as stated in regard to the cases in the first group, each individual's measurements would have to be considered in reference to the measurements found on his previous examination. The inspiratory breath sounds, as found by Irvine, were shorter than normal and the expiratory sounds prolonged, becoming much diminished in the second stage as compared with the negative.

Third Stage (corresponds to the secondary stage of South Africa).—In the third stage the shortness of breath is marked and distressing even on slight exertion. The cough is more frequent; the expectoration is in most cases slight but may be copious. The individual's capacity for work becomes seriously and permanently impaired; his expansion is greatly decreased even with forced inspiration; he may lose flesh; his pulse rate may be increased and his heart may become dilated.

The radiographic appearances in the third stage are further accentuated, the mottling is more intense and the nodules are larger and take on a conglomerate form, so that large shadows are shown corresponding to areas of dense fibrosis.

Irvine states that the workers in South Africa found advanced cases of third stage silicosis only among men of robust physique. He further states that few cases of advanced silicosis are without the infective element, although this may be latent and not apparent clinically. He noted that the general nutrition may be quite good and that many of the men are obese. With few exceptions there is some cyanosis and some obvious dyspnea. The chest is smoothly flattened without showing marked retraction. The intercostal and infraclavicular spaces may show no obvious hollowing. The chest has the appearance of moderate emphysema, and a greater or less degree of emphysema is a constant feature. The expansion is decidedly impaired; the percussion note is flat, although there may be local areas of dulness due to thickened pleura. The inspiration is very short and decidedly reduced; the expiration is high pitched, sometimes thin and rather blowy, but may be merely reduced. Formerly, secondary cardiac dilatation, with cyanosis and dropsy, eventually resulting in death, were seen. Irvine states that such cases are uncommon in South Africa at this time.

Only thirty-two third stage silicotic individuals were found in the series of examinations on which this paper is based. While this number is not sufficient to establish the symptom complex, the clinical observations and symptoms do confirm those found by Dr. Irvine.

Silicosis with tuberculosis, or silicosis plus tuberculosis, is stated by the South African workers to mean silicosis complicated by clinically obvious, active or overt tuberculosis; in other words, that there must be constitutional signs of active tuberculous infection, not merely physical signs of limited areas of consolidation or indications of the roentgenogram. However, the roentgenographic observations are important in the diagnosis of silicosis with tuberculosis.

Dr. Irvine calls attention to the fact that the supravention of active tuberculosis is usually very clearly indicated by a definite and progressive loss of weight, increased cough and expectoration, sometimes with hemoptysis, and rapid breakdown of the patient's condition. Dyspnea appears to be quite out of proportion to the actual extent of infection. However, in some cases in which the infective element is less acute, the disease may be, of course, very chronic, with a tendency to retardation and limitation of infection.

4. Silicosis, Studies and Reports, Series F, No. 13, Geneva, International Labor Office, 1930, pp. 283-284.

Two hundred and sixty-seven cases of silicosis plus tuberculosis were found among the 7,722 men examined in the Picher group; and again the observations in these cases were similar to those described by Dr. Irvine.

It should be emphasized that, while the cardinal symptom of silicosis is shortness of breath, the cardinal sign decreased chest expansion and the earliest specific indication, the characteristic roentgenographic appearance, the diagnosis should be made only by a correlation of all the facts: symptoms, signs, occupational history, and laboratory and roentgen observations.

ETIOLOGY OF SILICOSIS

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The Committee on Pneumoconiosis and the Committee on Standards of the American Public Health Association, at a joint meeting in November, 1932, adopted the following definition of silicosis:

> Silicosis is a disease due to breathing air containing silica (SiO_2) characterized anatomically by generalized fibrotic changes and the development of miliary nodulation in both lungs, and clinically by shortness of breath, decreased chest expansion, lessened capacity for work, absence of fever, increased susceptibility to tuberculosis (some or all of which symptoms may be present) and by characteristic x-ray findings. The disease is divided arbitrarily into first, second and third stages for convenience of description and possible compensation purposes.

I wish to make clear that in this discussion we are concerned with true silicosis and not with other forms of pneumonoconiosis due to the inhalation of dusts containing combined silica in the form of silicates or of organic dusts. Numerous dusts will produce a pneumonoconiosis demonstrable by x-rays; but just as these other dust diseases of the lung differ in their exciting cause, so do they differ in the pathologic changes that characterize them. Silicosis is an important disease because it is widespread in industry, and, because, as a result of the peculiar susceptibility to tuberculosis which it induces, it is attended by a high rate of mortality.

DUST

The primary cause of silicosis, then, is free silica, inhaled in the form of dust. Extensive research and experimentation have clearly demonstrated that this dust, in order to achieve its harmful effects on the lung tissue, must be in a fine state of subdivision; that the dust particles must, in fact, be less than 10 microns in their greatest diameter. Most of the dust penetrating the alveoli is less than 5 microns in diameter.[1] It is, therefore, a dust invisible to the unaided eye, and its estimation, in any specific instance, depends on a definite technic of dust sampling and counting. In this country that technic has been defined and standardized by the United States Public Health Service.[2] Dust concentrations are measured in terms of million particles per cubic foot.

Silicosis is a disease that develops slowly — very slowly as a rule, most frequently over a period as long as ten years. It may develop in two years, perhaps even less. The rate of development is dependent largely on the dosage of silica, and this in turn is determined by three variables—the amount of dust in the inspired air, the amount of silica in the dust, and the extent of exposure. Obviously, exposure to a concentration of forty million particles per cubic foot, containing 90 per cent silica, for eight hours a day, day in and day out, will produce silicosis much more rapidly than the same degree of exposure for two days a week or daily exposure to ten million particles containing 40 per cent silica. Actually, as these factors may and do vary in different localities, so do they mold the clinical picture. This accounts for the occasional dogmatic and varying statements made by observers familiar only with the conditions prevalent in their own vicinity. It has been claimed by some observers that certain substances, which may be present in silica-containing dust but not in combination with the silica, may advance or retard the development of silicosis. The presence of clay and other inorganic substances has been stated to prevent the development of silicosis,[3] while in other instances certain alkalis are credited with greatly speeding up silicosis, so that it may develop into a full blown case with fatal termination in the space of months rather than years.[4] Further study is needed to evaluate these observations.

INFECTION

The distinguishing characteristic of silicosis is the extraordinary susceptibility to tuberculosis which it induces in its victims. Years ago, Dr. Summons[5] of Bendigo, Australia, stated that the gold miners there who contracted silicosis died of tuberculosis and that observation has been confirmed in every part of the world where silicosis is prevalent. In my own experience I can recall but one patient who died from his pulmonary fibrosis. When a tuberculous infection is implanted on a silicotic lung, it intensifies and accelerates the formation of fibrotic tissue, and the pathologic vicious circle thus set up may continue for some time before the infection becomes clinically manifest. In other words, tuberculosis is more than a terminal infection in silicosis.

Studies made at the Picher Clinic by the United States Bureau of Mines and the Saranac Laboratory have shown that infection also occurs in silicotic lungs, as a result of a rather complex symbiotic union of the ordinary anaerobic bacteria of the upper respiratory tract, principally fusiform bacilli and Vincent's spironemes. Research into this phase of silicosis is now being carried on at the experimental laboratories of the Bureau of Mines in Pittsburgh and at the Saranac Laboratory. Thus, the principal etiologic factor in silicosis is silica in the form of dust, with the added factor, in a great majority of all but early cases, of tubercle infection, with the rôle of other infections not as yet clearly established.

Read before the Section on Preventive and Industrial Medicine and Public Health at the Eighty-Fourth Annual Session of the American Medical Association, Milwaukee, June 14, 1933.

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CONTRIBUTING CAUSES

I do not believe that individual susceptibility plays an appreciable part in the etiology of silicosis in normal individuals. Pre-existent pulmonary diseases, especially tuberculosis and pneumonoconioses, other than silicotic, tend to hasten and aggravate the development of silicosis. I have observed that coal miners who presumably had anthracosis and who then went to work in hard rock metal mines succumbed to silicosis much more rapidly than their fellow workers. The published reports of the Picher Clinic bear this out.[6] Age undoubtedly has an influence on the development of silicosis. The Picher studies show, for 8,000 men examined, that whereas all the patients with first stage silicosis had worked an average of thirteen years, those who had started mining after the age of 40 had worked an average of only 7.83 years. Nasal obstruction or other conditions causing mouth breathing are naturally credited with increasing the incidence of silicosis. The Picher reports do not show much definite relationship between the incidence of silicosis and previous diseases, but this was possibly in part due to the difficulty in securing accurate histories. Syphilis, however, definitely enters into the picture. All the evidence tended to show that men with a 4 plus Wassermann reaction developed silicosis more quickly than the Wassermann negative group, and their disease ran a more rapid course.

The influence of race on the incidence of silicosis is probably of minor importance, except perhaps as it may involve resistance to tuberculosis. There is some recent evidence which tends to show that American Negroes contract silicosis in a shorter time with a quicker fatal termination than do white men; but this may be but a reflection of a higher tuberculosis ratio, a higher syphilis ratio, or both.[7]

No correlation could be established in the Picher studies,[6] at least, between good or bad living conditions and the incidence of silicosis. Occupation, so far as it involves exposure to siliceous dust, is of the utmost importance. Silicosis exists only as an occupational disease and has been identified with metal mining for centuries. The introduction of pneumatic tools for drilling, cutting or chipping siliceous rock has occasioned a world wide distribution of silicosis, especially in mines, quarries, tunnel construction and stonework of various kinds. Sandblasting involves a most serious hazard and foundries and potteries contribute their quota of cases, as do processes involving grinding and vitreous enameling; the use of artificial grinding wheels has greatly diminished the hazard formerly associated with the use of natural stone wheels. Many other industrial processes, too numerous to list, involve exposure to siliceous dust.

Silicosis is a widely spread occupational disease and its peculiar relationship to tuberculosis, the difficulties of diagnosis, and the extreme difficulty associated with efforts for prevention and control, all combine to make it a disease of major importance. For this reason, I desire to emphasize most strongly the necessity for the precise recording of the patient's occupation, both by physicians and hospitals, especially in cases which present pulmonary symptoms. Not merely the patient's present but also his previous occupations should be ascertained.

Recent investigations and studies have revealed various types of pneumonoconiosis which tend to confuse further both diagnosis and prognosis. This makes imperative an accurate marshaling of all the etiologic factors in the consideration of any case in which the inhalation of silica dust is concerned.

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SILICON DIOXIDE CONTENT OF LUNGS IN HEALTH AND DISEASE

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Henke and Lubarsch [1] found reference to dust as a cause for disease of the lung as early as 1556. Ursinius in 1652 reported two forms of mountain sickness caused by the inhalation of dust. The study of the presence of carbonaceous material within the lungs and its association with pulmonary disease progressed slowly but steadily from that time to the present. The names of Ramazzini [2] (1717), Bubbe (1721), Leblanc (1795) and Johnstone (1799) are closely allied to the early history and development of pneumonoconiosis. Pearson,[3] in 1813, applied the term anthracosis to lungs containing carbon particles. The greatest advances in the diagnosis, treatment and prevention of silicosis have been made in the last thirty years. The first report with a microscopic demonstration of silica was made by Peacock [4] in 1860. In his article, wood cuts were used to demonstrate the presence of carbon and silica in teased sections of the lung. Greenhow [5] examined a specimen of lung from a razor grinder who had died from an intercurrent attack of acute pneumonia. He found crystalline and small angular bodies which, when submitted to hydrofluoric acid, were entirely dissipated. This is the first recorded chemical proof of the presence of silicon dioxide in the human lung. The first reference to silicosis was made by Rovida.[6]

Schmidt [7] reported sand in the lungs of all persons except the new-born. His figures, from 4.2 per cent to 17.3 per cent of silicon dioxide in the ash, were high for normal lungs. Eternod [8] found sand microscopically in the residue of lungs after treating with hydrochloric acid. Meinel [9] made a quantitative examination of the peribronchial lymph glands and lungs. Arlidge [10] quotes an analysis by Church of a potter's lung, the ash of which contained 47.78 per cent of silica. Ordtmann [11] reported the lungs of a 14 day old child to have 2.88 per cent of ash in the dry material. Orth [12] stated that normal lungs and peribronchial lymph glands do not show sand microscopically, while carbon and other

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2. Ramazzini, Bernardino: De morbus artificium diatribe, 1717.
3. Pearson: Phil. Tr. London **11**: 120, 1813.
4. Peacock: British and Foreign M. Rev. **11**: 263 (Jan.) 1860.
5. Greenhow: Tr. Path. Soc. London **16**: 59, 1865.
6. Rovida: Un caso di silicosis del polmoni con analisi chemica, 1871.
7. Schmidt: Deutsches Arch. f. klin. Med. **11**: 89, 1866.
8. Eternod: Reserches sur les affections chroniques des ganglions tracheobronchiques et les suites de as affections, Genève, 1879.
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10. Arlidge: Milroy Lectures, Lancet **1**: 615, 1889.
11. Ordtmann, in von Goroup-Besanez Lehrbuch, ed. 4, p. 732.
12. Orth: Lehrbuch der speziellen pathologischen Anatomie, Berlin **1**: 81, 1887.

dusts may appear. Schottelius [13] found that it required eight days for the sand to appear in the peribronchial lymph glands after entering the lungs, while other authorities reported a shorter time. Schlodtmann [14] examined the lungs of thirty-five patients, finding sand in all except in two babies, one 11 days old and the other 5 months old, reporting traces, moderate amount and rich in silica. He quotes Kussmaul [15] as saying thirty years before that the border line age for the presence of silica in infants was three quarters of a year. This statement is quoted by many authors and is in error, as will be noted in another paper which is now in preparation. Arnold [16] found that the peribronchial lymph glands contained more metal than the lungs. Woskressensky [17] found silica in all the fifty-four lungs examined except two from infants. The lungs of individuals whose occupations do not expose them especially to dust inhalations contain an increasing amount of silica in direct proportion to the age. A similar observation was made by Kall [18] in the examination of the hair. In the hair of new-born babies he found 0.1 per cent of silicon dioxide, and in dark brown hair 0.23 per cent. In only seven instances were quantitative examinations made by Woskressensky. He found that from 3.5 to 33.7 per cent of the ash of the lungs was silicon dioxide, while in the peribronchial lymph glands this amount was much higher, ranging from 18.3 to 55.6 per cent of the ash. Thorel [19] reported that the lungs of a worker in soapstone contained 3.25 per cent of ash, including 2.43 per cent of soapstone. Langguth [20] found in the lungs of an iron miner that 11.9 per cent of the dry weight was silicon dioxide. Hodenpyl [21] reported the analysis of the dried and powdered lung of a man who had worked at the trade of a knife grinder for fifteen years. The ash contained about 36 per cent of silicon dioxide. The emery represented by the oxides of alumina and silicon made up more than half of the ash.

McCrae [22] reported the analyses of the lungs of six gold mine workers in South Africa, finding from 9 to 21.7 Gm. of ash per lung, of which from 29 to 48 per cent was silica, while a normal lung contained 0.73 per cent. Hirsch [23] reported that from 0.04 to 0.72 per cent of the dry weight of the lungs of four Chicago residents was silica. Böhme [24] found that a normal lung contained 0.12 per cent of sand on the dried sample; the lungs of patients with silicosis contained from 0.35 to 8.77 per cent of silica, depending on what portion of the lung was used, nonindurated or indurated. King [25] reported 1.4 mg. of silicon dioxide per gram of dried normal human lung. In four other analyses he reported 29.6, 60, 63 and 123.55 mg., respectively, per gram of dried tissue. Chapman [26] reported that the left upper lung contained 12 mg. and the lower left lung 13.2 mg. in a case of acute silicosis. Nicol,[27] in a monograph, gives the microscopic and chemical examination of lungs.[28] The amount of silica found by him was less than that reported by Böhme.

Silica is a normal constituent of the connective tissue, skin, blood, bones, nails, urine, feces and saliva of man. Kall [29] found it in the pancreas and thought, because of the large amount of silicon dioxide, that the pancreas acted as a reservoir for silica in the same manner as the liver does for iron. Henneberg [30] found it in the blood of fowl and also in the feathers. Kraut [31] found that the silicon dioxide content of the blood of normal persons varies between 1 per cent and 3 per cent of the sulphate ash but that each individual maintains his silicon dioxide value within narrow limits. The blood of tuberculous subjects contains somewhat more silicon dioxide than that of a normal person. Kraut also found that the inhalation of a spray containing silicic acid raised the silicon dioxide 1.65 per cent over the normal. Collis [32] found that a soluble silica when introduced into the blood stream reacts with the liver and kidney, causing fibrosis.

TABLE 1.—*Percentage of Moisture in the Lung, Percentage of Ash, and Hydrochloric Acid Insoluble of Ash*

Case	Moisture, per Cent	Ash, per Cent	Weight of Lung, Gm.	Mg. of SiO_2 per Gram of Dried Tissue
312	85.72	5.61	600.5	0.92
311	89.15	6.71	729.5	1.86
317	3.96*	4.51	.....	1.22
325	86.28	5.61	306	1.06
324	89.55	7.19	785	0.90
323	77.15	4.66	652	0.85
333	88.04	6.23	518	1.10
332	83.34	5.35	893.2	3.28
39	88.42	5.67	402	2.24
41	73.96	3.75	619	1.65
35	85.31	....	388	1.40
42	84.21	6.58	602	1.50
34	89.13	5.52	561	4.60
350	89.98	5.14	707	0.92
352	86.20	7.51	708	2.40
349	82.57	3.82	1,048	0.73
267	86.08	8.13	468	7.06
359	81.99	5.24	543	0.79
356	87.18	5.39	397	1.41
357	89.37	5.77	416	1.25
360	89.87	5.98	304	2.66
358	81.82	3.66	122	0.13
368	85.84	3.36	312.5	1.51
361	84.49	5.97	321	2.37
337	81.79	5.68	756	9.75
389	89.13	6.51	310	0.64
431	90.06	5.15	780	0.71
441	86.03	6.17	378	1.21
455	.....	4.76	...	1.80
459	.....	4.10	...	0.40

* Moisture on dried sample.

The common opinion among the public and even among physicians is that silicon dioxide is an absolutely

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Hackmann: Beitr. z. path. Anat. u. z. allg. Path. (Ziegler's) **90:** 623, 1932-1933.
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insoluble substance and that it exists only as silicates and silicon dioxide. Next to oxygen, silicon is the most common element of the earth's crust. It is almost always combined with oxygen in the form of SiO_2 (silica) and silicates. Free silica represents 12.8 per cent of the earth's crust and in a combined form it is said to be present in the proportion of 42.5 per cent. It forms quartz, tridymite, clay and opals; mixed with in the air we breathe and in the water we drink. Ocean water contains more silica than fresh water, containing, according to Thoulet,[33] 0.0149 per cent of silica. The physiologic action and the manner in which it is absorbed are not clear. Some authorities are quoted as saying that it is absorbed as silicates and others as a colloid. The amount varies in different parts of plants and in different organs of man. In the lung of man,

TABLE 2.—*Age, Occupation, Clinical Diagnosis, Anatomic Diagnosis and Milligrams of Silicon Dioxide*

Case	Age	Sex	Occupation	Clinical Diagnosis	Anatomic Diagnosis	SiO_2 Mg. per Gram of Dried Tissue
312	63	♀	Dressmaker	Cardiac decompensation	Hypertrophy of heart; mural thrombus in apex of left ventricle	0.92
311	81	♂	Not given	Bronchopneumonia	Severe sclerosis of coronary and ab. art.	1.86
317	50	♂	Not given	Epidemic meningitis	Epidemic meningitis	1.92
325	62	♀	Housework	Suprarenal malignant metastasis to lung	Carcinoma of colon	1.06
324	73	♂	Not given	Mechanical obstruction of intestine	Fibrinopurulent peritonitis	0.90
323	63	♂	Not given	Bronchopneumonia	Eccentric hypertrophy of the heart with beginning brown atrophy	0.85
333	47	♂	Plasterer's helper	Pneumonia; tuberculosis	Moderate eccentric hypertrophy	1.10
332	38	♀	Housework	Carcinoma of cervix	Ulcerated dermoid cyst of cervix uteri	0.28
39	53	♂	Painter on automobiles	Cardiovascular renal disease	Eccentric hypertrophy of heart; marked dilatation; mural thrombi in the wall of L. V.	2.21
41	88	♂	Not given	Generalized arteriosclerosis	Eccentric hypertrophy of heart; dilatation of L. V.; early aneurysm formation in lateral wall	
35	65	♀	Not given	Cardiovascular renal disease; auricular fibrillation; decompensation	Eccentric hypertrophy of heart	
42	81	♂	Machinist	Chronic myocarditis; hyper., emphysema and fibroid tuberculosis	Subacute peptic ulcers of pyloric portion of stomach with erosion of artery and hemorrhage	1.5
34	59	♂	Not given	Malignant condition suspected; diagnosis uncertain	Solid round cell carcinoma of common bile duct	4.6
350	64	♂	Donkey driver and sailor	Carcinoma of head of pancreas with metastasis to the liver	Adenocarcinoma of common bile duct	0.92
352	50	♂	Unemployed	Prostatic retention; ascending pyelytis; pyelonephritis	Pseudomembranous hemorrhagic cystitis; bilateral pyelonephritis with multiple renal abscesses	2.4
349	52	♂	Worked in coal tar factory	Tuberculosis; carcinoma of lung; aneurysm of descending aorta	Saccular aneurysm of descending thoracic and abdominal portions of aorta, with compensatory atelectasis of left lower pulmonary lobe	0.73
267	65	♂	Farm worker; steel mill	In view of peripheral arteriosclerosis, the only diagnosis made was generalized arterial coronary sclerosis and cardiac failure	Eccentric hypertrophy of heart, especially of right ventricle	7.06
359	73	♂	Machinist	Infected diabetic gangrene of right foot	Diabetes mellitus	0.79
357	46	♀	Not given	Retroversion; bilateral salpingitis; organic heart disease, probably mitral	Diffuse recent hypertrophy of heart	1.25
356	61	♀	Not given	Cardiac hyper.; broken compensation	Eccentric hypertrophy of heart	1.41
360	41	♀	Housework	Infected draining abscessed wound; secondary breast abscess	Chronic localized fibrosis; pelvic peritonitis	2.66
358	2	♀		Tracheobronchitis; acute edema; bilateral otitis media	Confluent bronchopneumonia in right upper and lower pulmonary lobes	0.13
368	13	♂	Pupil	High intestinal obstruction	Gangrenous suppurative appendicitis; large fecalith obstructing proximal portion	1.51
361	47	♂	Building worker	Hypertensive heart disease; decompensation	Eccentric hypertrophy of heart	2.37
337	28	♂	Shoveling coke in coalyard	Bilateral, far advanced tuberculosis, with serofibrinous pleurisy	Acinose nodose tuberculosis, combined with silicosis of lung	0.75
389	31	♂	Laborer	Syphilitic aortitis; myocardial failure; ascites and edema	Spontaneous rupture of ascending aorta	0.64
431	85	♂	Not given	Rheumatic heart; hyper.; dilatation of heart; myocardial fibrosis and failure; coronary sclerosis-thrombus?; decomp. of lungs, liver, intestines, etc.	Chronic tuberculosis in right upper and both left pulmonary lobes	0.71
441	40	♂	Laborer	Pellagra; malnutrition; chronic fibroid apical tuberculosis	Lobar pneumonia in central portions in left lower pulmonary lobe	1.21
455	38	♂	Laborer	Shock and hemorrhage following beating		1.80
459	23	♀	Waitress	Extensive hemorrhage following skull fracture; fractured ribs and punctured left lung		0.40

various metallic oxides it forms flints, sandstone, agate, amethyst and cornaline.

Silicon is a tetravalent metalloid with an atomic weight of 28 and belongs to the carbon family, which it resembles in its physical and chemical properties. For instance, there is carbon dioxide CO_2, and silicon dioxide SiO_2. It forms liquid compounds, such as tetra-ethyl silicon, similar to carbon tetra-ethyl $C(C_2H_5)_4$. It differs from carbon in that it is very stable and at ordinary temperature is attacked only by hydrofluoric acid. Silica is a common constituent of all our food whether of animal or of vegetable origin. It is found not exposed to a dusty atmosphere, some of this silica is endogenous in source and the remainder is derived from the air inhaled.

In order to arrive at an average of the silicon dioxide content of lungs, material was requested from various pathologists. Through the kindness of Dr. R. H. Jaffe of the Cook County Hospital, Dr. Henry Sweany of the Municipal Tuberculosis Sanitarium of Chicago and Dr. LeRoy U. Gardner of Saranac Laboratory, Saranac, N. Y., material was received from people dying of various diseases. The fresh material as received was

33. Thoulet: Guide de oceanographie pratique, Paris, G. Masson, 1895.

weighed and dried, the dried sample was pulverized, and a second moisture was made on 20 Gm. of the ground sample. This sample was ashed, weighed and digested with hydrochloric acid, evaporated to dryness, and the process repeated. The residue was taken up with hydrochloric acid and water, filtered, and the insoluble residue incinerated in a platinum dish. This was recorded as the hydrochloric acid insoluble. This ash was nearly always white. This residue was treated with hydrofluoric acid. The loss of weight was recorded as silicon dioxide. In the majority of instances a faint to a weighable residue of iron stained material was noticed. This was dissolved in hydrochloric acid and added to the original filtrate. The results are shown in table 1. The average of twenty-one samples under 2 mg. per gram of dried lung gives an average of 1.13 mg. Any lung containing over 2 mg. of silicon dioxide per gram of dried tissue indicates undue exposure to a dusty atmosphere.

In table 2 the age, occupation, clinical diagnosis, anatomic diagnosis and the milligrams of silicon dioxide are recorded for comparison. Patients 267 and 337, working in dusty trades, clearly show the deposition of an increased amount of silicon dioxide. The clinical and anatomic diagnosis did not indicate pulmonary involvement in case 267. In table 3 the silicon content

TABLE 3.—*Silicon Content of Lungs of Eight Persons Working in Dusty Atmospheres*

Case	Ash, per Cent	Mg. SiO_2 per Gram of Dried Tissue	Occupation
44	10.78	8.6	Mill stone sharpener
503	17.14	14.0	Stone cutter
327	12.36	2.4	Machinist
429	14.58	3.6	Engineering draftsman
463	19.99	4.3	Coal miner, 25 years
411	8.84	5.0	Stone quarry, 9 years
309	8.46	26.0	Granite cutter
446	5.59	10.9	Zinc miner

The lungs were preserved in solution of formaldehyde; the ash in cases 44, 503, 327, 429 and 463 was preserved in Kaiserling solution, which accounts for the higher ash content of these specimens.

in eight cases all presenting the history of working in dusty atmospheres is given.

The lungs of tuberculous subjects contain somewhat more of silicon dioxide than normal persons; some of this may come from inhalation or directly from the blood stream, as the blood of tuberculous subjects contains more silicon dioxide than that in normal persons. All clinical observations [32] have shown that a silicotic patient is particularly liable to fall a victim to a tuberculous infection and that the silicotic process continues to advance after complete withdrawal from exposure. During life the diagnosis of silicosis depends on the history, clinical examination and roentgenographic evidence of the disease. Many times the roentgenograms are not decisive, so the diagnosis of silicosis, tuberculosilicosis or tuberculosis is not made with certainty. At the autopsy the doubt may still linger and it is then that a chemical examination for the quantitative determination of silicon dioxide aids in arriving at the correct diagnosis.

CONCLUSION

1. The normal lung contains 1.13 mg. of silicon dioxide per gram of dried tissue.

2. A chemical examination of the lungs should be made in every case coming to autopsy, in which there is a history of a dusty occupation.

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ROENTGENOLOGIC ASPECT OF PNEUMONOCONIOSIS AND ITS DIFFERENTIAL DIAGNOSIS

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In view of the more recent pathologic and histologic studies, added clinical experience and a much better knowledge of the condition, physicians are now at a loss to define pneumonoconiosis and its most frequent industrial form of silicosis in any simple terms such as have been applied in the past. The general term of pneumonoconiosis must still be adhered to because other dusts than silica are capable of producing definite histologic changes in the lung structure, as coal dust, certain silicates and possibly many others, but the effects of which require further study. It is the prevailing impression that pulmonary fibrosis is the essential and characteristic feature of pneumonoconiosis in general, but in reality this is the terminal effect. Probably certain intermediate changes are of very considerable importance except in the way of the terminal disability. In discussing pneumonoconiosis, we are giving consideration to only those histologic changes which are the result of the phagocytosis of dust particles and their introduction into the lymphatic system of the lungs, with the exception of asbestosis. This is another industrial type of pneumonoconiosis in which the presence of the asbestosis bodies and their obstructive tendencies in the terminal air passages and the probable resulting minute atelectases are responsible for an important part of the clinical and pathologic features of the condition. Recently Cooke [1] has called attention to somewhat similar bodies in the lungs of anthracotic individuals. In the progress toward the terminal process of pulmonary fibrosis in pneumonoconiosis, the processes of cell proliferation and infiltration, lymph block, cell necrosis and the factors in predisposition to infections must be given due consideration. There is also to be considered the uncertain effects of the inhalation and phagocytosis of unusually large quantities of silica in amounts far in excess of what can be accommodated to the production of immediate pathologic effects. Can this in itself predispose to infections such as pneumonia and tuberculosis as do the later effects on cell life and tissue structure? It will be realized, therefore, that any comprehensive definition of silicosis or even of pneumonoconiosis in general would be far too complex for practical use. Furthermore, when do the effects of dust intake become really harmful and when may the condition be regarded as really beginning? Many city dwellers have the effects of silica in their lungs and yet do not acknowledge the acquirement of silicosis. Possibly the best that can be stated in the way of a definition is that pneumonoconiosis is "the injurious effects produced in the lungs by the inhalation of unusual quantities of certain dusts." Even this is extremely vague in the statement of facts. The foregoing remarks may seem verbose, and yet they apply to points we are constantly asked to define from the legal standpoint.

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There is, at the present time, long ago prognosticated, and now fully realized, a definite tendency for the condition under discussion to become an important and more and more extensive medicolegal problem. This is, no doubt, a natural course of events which represents a transition stage in the necessary recognition of pneumonoconiosis as a compensatable hazard under certain circumstances, and practically unavoidable under our form of government. It is a necessary hazard in the progress of commercial development of modern civilization and it must be realized that this progress has kept in advance of adequately developed devices for the full protection of the workers against the hazard in many instances. Hence there are many just claims for compensation in some form. Naturally, disability is the criterion for legal claims for compensation. Without adequate compensation laws or satisfactory means of carrying out those which may exist, there are bound to arise unjust claims for disability as a result of inefficient training and experience on the part of many individuals who attempt to diagnose an incapacitating pneumonoconiosis or to differentiate between it and some other condition that may simulate it by roentgenographic appearances or clinical features.

Fig. 1.—Case of coronary thrombosis, the day after the attack, showing intensification of hilar and trunk shadows on the right side, which simulate the appearance of the perivascular-peribronchial-lymph node phase of pneumonoconiosis.

Naturally, any one who attempts to make roentgenologic interpretation of pneumonoconiosis must possess as a basis for his ability a thorough familiarity with the roentgenographic appearances of the normal, with those of the condition in question, and with those of any other condition that may simulate it. As roentgenographic appearances represent actual pathologic processes, the pathology of each condition must be understood. Moreover, it is necessary in every instance to know something of the physical factors concerned in the production of a possible or suspected pneumonoconiosis.

There are definite characteristic appearances in pneumonoconiosis that represent pathologic phases or stages. It is necessary to discuss differential diagnosis in connection with each of these. We[2] have called attention previously to our preference for the use of phases or types of appearances based on actual pathologic changes rather than the designation of roentgenologic features by numerical stages of progress, which, moreover, cannot be made to apply to the condition produced in all industries. We shall not, therefore, refer to the pathologic basis for each roentgenologic phase but simply describe the roentgen appearance of each in connection with differential diagnoses.

Pulmonary tuberculosis is a frequent complication of pneumonoconiosis. The latter condition may be a predisposing factor in the frequent incidence and serious consequences of the infection, especially when the progress of the pneumonoconiosis is rapid. The two conditions often must be differentiated when only one exists or pneumonoconiosis is present in only a minor degree and presumably not sufficient to exert any predisposition. Differentiation is necessary because the two conditions may produce quite similar roentgenologic appearances. This aspect of the diagnostic problem forms the subject of another paper, which is in the course of preparation.

2. Pancoast, H. K., and Pendergrass, E. P.: A Review of Pneumoconiosis: Further Roentgenological and Pathological Studies, Am. J. Roentgenol. **26**: 556 (Oct.) 1931; The Roentgenological Aspect of Pneumoconiosis and Its Medico-Legal Importance, J. Indust. Hyg. **15**: 117 (May) 1933.

ROENTGENOLOGIC PHASES OF PNEUMONOCONIOSIS OR PREDOMINANT APPEARANCES

1. The perivascular-peribronchial-lymph node phase of pneumonoconiosis is a definite entity based on well recognized histologic changes and characteristic roentgenographic features. The hilar shadows are more prominent than usual and of greater density and homogeneity. The trunk shadows and linear markings show increased prominence. This appearance cannot be regarded as pathognomonic of pneumonoconiosis because it is produced by numerous other conditions, which will be discussed in differential diagnosis. Furthermore, the appearances just described should not be ascribed to pneumonoconiosis unless shown to have arisen during serial examinations and unless all conditions producing like abnormalities can be excluded. This phase of pneumonoconiosis is not incapacitating. It frequently does not exist by itself but often has associated with it a mild interstitial or a slightly developed nodular phase, or both. The following conditions may closely simulate the appearances of this phase of the condition.

Passive Congestion of the Lungs as a Result of Cardiac Decompensation.—In this condition the enlargement of the heart shadow, the abnormalities of the cardiac silhouette, especially in cases of mitral stenosis, and the clinical picture serve to establish the presence or absence of passive congestion. If pneumonoconiosis is absent the appearances are likely to disappear with restoration of compensation, but not altogether in long standing cases. Marked emphysema is usually associated with pneumonoconiosis and is apt to cause a certain amount of rotation of the heart, so that the sagittal roentgenogram does not convey a direct impression of cardiac size or shape. The lateral view is always necessary to clear up the diagnosis. Any phase of pneumonoconiosis is likely to have its roentgenographic appearance greatly accentuated by passive congestion.

Fig. 2.—The same case as figure 1, four weeks later, showing the localized dilatation of the left cardiac border and the disappearance of the pulmonary evidence of decompensation.

Passive Congestion Associated with Coronary Thrombosis.—Following the incidence of coronary thrombosis, passive congestion with its roentgen appearances of prominent hilar and trunk shadows is commonly found for from three to six weeks after the attack and is

especially noticeable in the right lung. This appearance and the clinical evidences of decompensation will clear up when compensation is established. If the thrombosed vessel is in the proper location, a very marked localized dilatation of the left ventricular curve will be noted where the muscle has undergone atrophy and has been largely replaced by fibrous tissue (figs. 1 and 2). We have seen one case of this kind mistaken for pneumonoconiosis.

Advanced Bilateral Bronchiectasis. — The dilated bronchi, retained secretions and associated tracheobronchitis characteristic of this condition will produce the appearance of greatly accentuated trunk shadows, which may simulate that of the phase of pneumonoconiosis under discussion.

Asthma.—This condition will produce various alterations from the normal roentgenographic appearances of the lungs. There is very apt to be an intensification of the hilar and trunk shadows and very often an associated coarse mottling of the lung fields. The latter appearance may appear or become accentuated during and immediately following an asthmatic attack. The two conditions may be associated, and what might be a very moderate degree of incapacitating pneumonoconiosis would have its appearance greatly accentuated by the asthma.

Infiltrating or Permeating Malignant Metastases.—Quite frequently, metastatic malignant processes in the lungs are of such a character as to take on the appearance of greatly accentuated hilar and trunk shadows which closely simulate the appearance of pneumonoconiosis. Naturally the individual is incapacitated and often in a way similar to the silicotic subject (fig. 3).

Polycythemia or Erythremia.—This condition may be regarded from two points of view. As an independent disease it usually has associated with it an increased prominence of the hilar and trunk shadows due to the engorged pulmonary vessels. On the other hand, high red cell counts, even sufficient to suggest polycythemia, are very frequently associated with pneumonoconiosis. There seems to be reason to believe that lung fibrosis and pulmonary arteriosclerosis can produce a condition perhaps akin to polycythemia and presumably due to impaired interchange of oxygen and carbon dioxide. Yater and Constam [3] reported two cases of primary pulmonary arteriosclerosis, one an anthracotic patient with emphysema, and the other with a mitral stenosis. They state that secondary pulmonary arteriosclerosis involves the larger vessels and may be due to mitral stenosis, emphysema, congenital heart disease and conditions in which the lung volume is reduced, as tuberculosis and tumor. Polycythemia is one of the clinical phenomena. Rosenthal [4] reported three cases of workers in dusty atmospheres or with irritating gases in whom there developed cyanosis and dyspnea and true polycythemia in one. Moschowitz [5] believes that secondary pulmonary arteriosclerosis is very common. He found it in 6.5 per cent of autopsies and places the causes in the order of frequency as mitral stenosis, emphysema, pulmonary fibrosis, extensive pleural adhesions, kyphoscoliosis and congenital heart lesions. We have been interested in determining any relations between pneumonoconiosis and polycythemia, and in our search for any true associations we have been inclined to accept the views of Wood [6] that there are really two conditions to be considered. One is a compensatory mild polycythemia from lung fibrosis, and the other the true erythremia originating in bone marrow changes and capable of producing alterations in the roentgenographic appearances of the chest referred to at the beginning of this paragraph.

Mycotic Infections.—Most of the mycotic infections of the lungs with which we have had any personal experience have produced appearances simulating the nodular phase of pneumonoconiosis, but occasionally they may be confused with the perivascular-peribronchial-lymph node aspect of the condition. The differentiation may be most difficult or impossible.

2. The early interstitial stage of pneumonoconiosis also is based on well recognized histologic changes and characteristic roentgenographic appearances. It is characterized by a rather faint homogeneous haze, appearing first in the right mid or lower lung field and then in the left, and gradually spreading in extent. Small discrete dense nodules may or may not coexist. The hilar and trunk shadows are noticeably accentuated. There is more or less interference with diaphragmatic excursion. Aside from the differentiation of a tuberculous pneumonic process in the rapidly developing cases, the only other conditions to cause confusion in the proper interpretation of the homogeneous haze would be an interstitial pneumonitis or bronchosinusitis and a rheumatic pulmonitis. These conditions should always be given careful consideration and the differentiation is an important one.

Fig. 3.—Infiltrating or permeating type of a metastatic malignant condition of the lungs. This patient had a retroperitoneal sarcoma as the supposed primary growths, which responded to irradiation. Metastases to the neck, mediastinum and lungs were far less radiosensitive and, while they were held in check for over three years, eventually ceased to respond.

3. The nodular phase is productive of the most characteristic and specular roentgenographic appearances of pneumonoconiosis. While it is quite typical of the condition, it does not occur in connection with all industries, especially when the intake of silica is unusually copious and the condition of silicosis is rapidly progressive. The characteristic appearance of the slowly progressing type is that of small, dense, discrete nodules throughout both lungs. There is no definite pleural involvement. In older cases there may be some interference with diaphragmatic excursion, probably as a result of interstitial fibrosis obscured by the associated emphysema. In the more progressive type the smaller nodules become larger and conglomerate and there are further evidences of interstitial fibrosis, indicated particularly by restricted diaphragmatic excursion and often peaking of the domes. The appearance may be simulated by a number of conditions, including tuberculosis of the perinodular silicotuberculosis type, tuberculous bronchopneumonia and miliary tuberculosis.

3. Yater, W. M., and Constam, G. R.: Pulmonary Arteriosclerosis, M. Clin. North America **12**: 1689 (May) 1929.
4. Rosenthal, S. R.: Sclerosis of the Pulmonary Artery and Arterioles, Arch. Path. **10**: 717 (Nov.) 1930.
5. Moschowitz, Eli: The Cause of Arteriosclerosis, Am. J. M. Sc. **178**: 244 (Aug.) 1929.

6. Wood, F. C.: Personal communication to the authors.

The appearance is simulated also, in our experience, by the following conditions:

Nodular Metastatic Malignant Conditions of the Lungs.—Most cases of this kind are readily differentiated from nodular silicosis, but occasionally one encounters a case in which appearances are very similar because the metastatic nodules are small, unusually numerous and widely and symmetrically scattered.

Actinomycosis.—This may occasionally present an appearance like that of nodular silicosis, although the nodules are usually larger and less numerous in comparison with it and with similar infections to be mentioned later.

Sporotrichosis.—We have examined one case of this infection in which the appearance was so identical with that of the nodular phase of silicosis that we could not be convinced that the condition was not the latter except by the lack of exposure and by subsequent observations at autopsy. Miliary tuberculosis was also considered as a possibility and, in fact, the alternative.

Fig. 4.—Leptothrix infection of lungs presenting an appearance of symmetrical diffuse soft nodulation simulating nodular pneumonoconiosis.

Leptothrix Infection.—We have encountered one case of this kind presenting an appearance quite similar to nodular silicosis (fig. 4); but the diagnosis was readily made by culture from the sputum and there was no occupational history.

4. The advanced diffuse or terminal fibrosis stage of silicosis is to be differentiated mainly from chronic diffuse tuberculosis or an accompanying tuberculosis is to be determined. Occasionally a case showing massive fibrotic areas mesially located may present an appearance resembling a mediastinal tumor.

ASSOCIATION OF PRIMARY BRONCHOGENIC CARCINOMA

Primary bronchogenic carcinoma is arousing much interest in connection with pneumonoconiosis because of the possibility of the latter condition acting as a predisposing cause, and the time has arrived to attempt some settlement of this question. The publicity of the historic and very obvious predisposition of the Schneeberg miners to lung cancer and the more recent knowledge of a similar state of affairs among the Joachimstal underground workers has led to a belief that pneumonoconiosis may play a part in the etiology of bronchial carcinoma. In previous communications [7] we stated definitely that we had never encountered a case of lung cancer associated with pneumonoconiosis in any of the individuals examined by us for either condition or observed evidence of the combination in roentgenograms interpreted of several hundreds of other cases of the latter disease. During the past fifteen months, however, we have examined two proved cases of bronchogenic carcinoma in association with pneumonoconiosis and have been accorded the privilege of referring to a third case the roentgenograms of which we have seen recently. This experience has made us give more serious consideration to the question as to whether there is or is not a predisposition which might lead to making primary lung cancer in a case of pneumonoconiosis a compensatable disease. The three cases are summarized briefly as follows:

CASE 1.—J. M., a man, aged 66, referred from the service of Dr. Alexander Randall, University Hospital, Aug. 17, 1932, for routine roentgen examination, had worked in a coal mine for twenty years but not during the past twenty years. Roentgenograms showed very definite evidence of a moderate pneumonoconiosis, but not of an incapacitating degree. In addition, a mass lesion was found involving the right lower and possibly the middle lobe, which was regarded with suspicion as a secondary effect of bronchogenic carcinoma. Bronchoscopic examination by Dr. Gabriel Tucker revealed a fungating mass extending from the carina down into the right lower lobe bronchus with evidences of mediastinal metastasis. Biopsy confirmed the suspicion of carcinoma.

CASE 2.—A. G., a man, aged 45, referred from the service of Dr. J. T. Ullom at the Chestnut Hill Hospital, Feb. 17, 1932, for examination to determine the cause of a slightly productive cough, pain in the right chest posteriorly and 20 pounds (9 Kg.) loss in weight during a period of two months, had worked in a coal mine for thirty years without becoming incapacitated. Roentgenograms showed a definite pneumonoconiosis but of very moderate degree. There were evidences of atelectasis of the right lower lobe leading to a suspicion of a bronchogenic growth, and bronchoscopy was advised. This was performed by Dr. C. L. Jackson and revealed a growth in the right lower lobe bronchus which biopsy proved to be carcinoma.

CASE 3.—This case is referred to through the courtesy of Dr. C. L. Jackson, who first examined the man, Nov. 12, 1931, and recently sent us the roentgenograms for review. The patient had been a coal miner and the roentgenograms showed a nodular phase of pneumonoconiosis throughout the right lung. The left lung was the seat of an extensive atelectasis and drowning. Autopsy nearly a year later confirmed the diagnosis of bronchogenic carcinoma.

Dr. Jackson kindly sent us the roentgenograms of three other cases of coal miners in whom bronchogenic carcinoma has been diagnosed. Two are still living and the third died, but there were no bronchoscopic or autopsy confirmations in any of them. We examined a female glass factory worker of twenty-two years' occupation, in 1931, and found evidences of a moderate degree of silicosis and appearances suggesting carcinoma in the left lower lobe bronchus. The bronchoscopic observations also were suggestive, but a biopsy was not thought advisable and autopsy was not permitted. These cases are all suggestive, of course, but are valueless for statistical purposes because, first, of the lack of histologic confirmation and, secondly, there is no characteristic roentgenographic appearance of primary bronchogenic carcinoma.

Notwithstanding these personal experiences, we are not convinced that there is ample justification at the present time for a belief that pneumonoconosis is a predisposing factor in the incidence of primary bronchogenic carcinoma, and for the following reasons:

1. We have had the opportunity of studying a large number of cases of pneumonoconiosis from various industries and have been so situated in a medical center and in an institution well equipped with an active bronchoscopic clinic as to have referred to us for examination or consultation many cases of primary lung cancer.

7. Pancoast and Pendergrass (footnote 2, first reference). Pneumonoconiosis (Silicosis): A Roentgenological Study with Notes on Pathology, New York, P. B. Hoeber, Inc., 1926.

Notwithstanding these facts we have seen only three proved cases of bronchogenic carcinoma in association with pneumonoconiosis. While Weller [8] states that other authors have reported cases among coal miners, sandstone workers, cigar makers and in many other occupations, we cannot accept isolated reports as conclusive evidence, especially as every male patient with cancer of the lung presumably has had a job of some kind.

2. The Schneeberg and Joachimstal cases were obviously due to some factor different from the usual causes of pneumonoconiosis, and radium emanation or arsenic would seem to have been the most likely of the unproved predisposing causes.

3. While animal experimentation as carried out by Willis,[9] Willis and Brutsaert,[10] Murphy and Sturm [11] and others has suggested that certain cell hyperplasias producible through the action of dusts, tar and other irritants may be precancerous conditions, there is no absolute proof that they are. Moreover, similar hyperplasias are noted bronchoscopically quite often in the human subject and are invariably reported histologically as inflammatory in origin. The Jacksons [12] report that on many occasions they have removed tumor-like bodies obstructing a bronchus and the histologic examinations have shown nothing except chronic inflammatory tissue. These growths have been regarded as serious because of the resulting secondary effects of atelectasis, drowned lung, suppuration, abscess and bronchiectasis. The etiologic factors have been regarded as stagnation of secretions, especially of a purulent character, and the specific granulomas—tuberculosis, syphilis and fungous infections. Any inflammatory process in the bronchi may be associated with a nodule that assumes tumor-like form, and mechanical contraction through elongation and shortening of the bronchi during respiration might mold protuberant inflammatory new formations into tumor-like form.

Fried,[13] like many others, is inclined to ascribe bronchogenic carcinoma to infections and inflammatory conditions. Of the three types of cells found in the bronchial mucosa—ciliated, goblet and "basal" epithelial cells—the last is concerned in the regeneration of respiratory mucosa. Metaplasia of these cells occurs in numerous bronchopulmonary diseases, as influenzal pneumonia, measles, diphtheria and whooping cough, and Fried regards this metaplasia as, in a sense, a precancerous state. He believes that only the basal cells produce cancer. This opinion is not shared by others. Fox,[14] for example, found three cancers with mucous producing or goblet cells among thirty-seven positive biopsies in eighty-five referred bronchoscopic tissues.

A brief review of the Schneeberg and Joachimstal situations seems worth while for a better understanding of the relations between lung cancer and mining operations. Weller [8] states that cancer among the Schneeberg miners "is probably the most extraordinary and at the same time the least understood of all associations which have been discovered to exist between occupation and the incidence of neoplasm." Literature on the subject of the high mortality among the underground workers of the Schneeberg cobalt mines in Saxony began as early as 1500. Weller refers to the report of Thiele, Rostoski, Saupe and Schmorl [15] of official investigations of 154 miners during a period of nearly four years, during which time twenty-one died, and thirteen of these with a diagnosis of primary lung cancer made at autopsy. Two of these men had not worked in the mines for many years, which we believe makes the theory of radium emanation as the etiologic factor a debatable point, although it may not exclude it. Weller also refers to the investigation of the mines by Rostoski, Saupe and Schmorl.[16] There was much hard rock drilling and a great amount of dust. The ore contained iron, bismuth, tin, zinc, lead, manganese, uranium, cobalt and nickel, chiefly in combination with sulphur and arsenic. Because of the uranium content, and therefore radium also, the ore was radioactive, as was also the mine atmosphere up to as high as 50 mache units. The possible etiologic factors considered were silica, chemically active dusts, especially arsenic and in volatile form, radium emanation and the flora of the damp mines. Many of the men had demonstrable silicosis. The exact factor still remains uncertain. In regard to the radium emanation, Martland [17] states that the active deposit present after death of the individual would be entirely too small to be measured.

At Joachimstal, in Bohemia, and 30 kilometers from Schneeberg, are the mines which have been famous as a source of radium, although originally they were worked for silver, cobalt, nickel, bismuth and arsenic. The mining for uranium preceded the discovery of radium. In 1929 and 1930, Pirchan and Sikl [18] investigated these miners, who also had been known to have a high mortality rate for pulmonary diseases. During that period nineteen miners died, ten recently active and nine pensioners. Thirteen of these were examined post mortem, and primary lung cancer was found in nine. Tuberculosis, pneumonia and trauma were the other causes of death. Unfortunately, careful studies were not made from the standpoint of the etiology of the cancer. The atmosphere of the mines had approximately the same radioactivity as at Schneeberg. Unlike the Schneeberg miners, they presented no marked degree of silicosis. We cannot help but feel that radium emanation and arsenic must be strongly suspected as etiologic factors in both of these mines, although it would be most difficult to obtain positive proof for the implication of the former.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. SAYERS, LANZA, MC NALLY, AND PANCOAST AND PENDERGRASS

DR. EMERY R. HAYHURST, Columbus, Ohio: Dr. Lanza's paper, introduces much needed evidence, since the status of pneumonoconiosis has run a continuous gantlet of false ideas. Virchow declared against dust entering the lung parenchyma and that pigmentation was only altered blood. Zenker disproved this and Richardson in 1875 found 47.78 per cent of silica in the lung ash of a potter. In 1872 Hirt championed the mechanical injury theory, and only within the past six years has the

8. Weller, C. V.: The Pathology of Primary Carcinoma of the Lung, Arch. Pathol. **7**: 478 (March) 1929.
9. Willis, H. S.: The Pulmonary Effects of Over Three Years' Exposure of Guinea-Pigs to Silica Dust, Am. Rev. Tuberc. **17**: 253 (March) 1928.
10. Willis, H. S., and Brutsaert, P.: Tumor-like Structures in the Lungs of Guinea-Pigs Artificially Exposed to Silica Dust, Am. Rev. Tuberc. **17**: 268 (March) 1928.
11. Murphy, J. B., and Sturm, E.: Primary Lung Tumors in Mice Following the Cutaneous Application of Coal Tar, J. Exper. Med. **42**: 693 (Nov.) 1925.
12. Jackson, Chevalier, and Jackson, C. L.: Benign Tumors of the Trachea and Bronchi, with Special Reference to Tumor-like Formations of Inflammatory Origin, J. A. M. A. **99**: 1747 (Nov. 19) 1932.
13. Fried, B. M.: Primary Carcinoma of the Lungs: III. Histogenesis and Metaplasia of Bronchial Epithelium, Arch. Path. **8**: 46 (July) 1929.
14. Fox, H.: Personal communication to the authors.
15. Thiele, Rostoski, Saupe and Schmorl: Ueber den Schneeberger Lungenkrebs, Muenchen. med. Wchnschr. **71**: 24, 1924.
16. Rostoski, Saupe and Schmorl: Die Bergkrankheit der Erzbergleute in Schneeberg in Sachsen, Ztschr. f. Krebsforsch. **23**: 360, 1926.
17. Martland, H. S.: The Occurrence of Malignancy in Radioactive Persons, Am. J. Cancer **15**: 2435 (Oct.) 1931.
18. Pirchan, A., and Sikl, H.: Cancer of the Lung in the Miners of Jachymov (Joachimstal): Report of Cases Observed in 1929-1930, Am. J. Cancer **16**: 681 (July) 1932.

chemical theory come to the fore. Forty years ago, granite workers were considered immune. Within this century Calmette contended that all pneumonoconiosis is of intestinal origin. Prior to Collis's studies of twenty years ago, nodular fibrosis was considered the product of any hard dust. The coexistence of tuberculosis was recognized even before the germ of this disease was discovered. Thus there was a "dust phthisis" as well as a "tuberculous phthisis." It remained for the radiologist to clarify the etiologic picture during life, and Dr. Lanza was with Dr. Childs in the earliest of these group studies in America, in 1914 and 1915. Illinois adopted a blower law in 1897 for the protection of polishers and others, which had greatly reduced complaints by 1910, although autopsies in Cook County Hospital between 1908 and 1913 encountered typical "dust phthisis." In Ohio, from 1913 to 1915, dust from flint mills in the pottery industry was recognized as the most hazardous, thus tallying with the 1930 British report, potteries leading, with 241 fatal cases in fifteen industries. Silicosis has been officially reported in sixteen industries in Ohio, but the total of cases is not large. Intensive investigation was made in only one place, the Berea sandstone works, in 1926. Here, out of 912 men, 260 had silicosis, and 238 others had increased pulmonary fibrosis. The dust contained from 93 to 97 per cent of silica. However, only 1.9 per cent of active tuberculosis was found, while general disability was likewise low. A check-up in 1932 of the county tuberculosis records revealed that only five deaths had occurred from tuberculosis among these workers in the intervening six years, and but five active cases were then on record. A more complete study, however, is wanted. If the hazard is in direct relation to the fineness of the dust, the British procedure of weighing the dust per measured volume of air would appear better than the present American one of attempting to count the dangerous particles, since ultramicroscopic dust cannot well be counted. Its amount may be appreciated, however, in a beam of strong light. Is not the essential personal factor the volume of air inspired per unit time of exposure? Owens in 1921 found that quiet breathing may not carry any dust into the deeper parts of the lungs but that deep breathing may carry over 20 per cent of that inhaled. The pace of work is therefore very important.

DR. BENJAMIN GOLDBERG, Chicago: Clinically, concern in silicosis is primarily with the care of the patient and secondly with the medicolegal aspects of this condition. The etiologic history is important in making a diagnosis. Also of importance are conditions which may be present in the patient that tend to stimulate fibrous tissue formation more readily. The changes outlined by Drs. Pancoast and Pendergrass in their description of three stages may occur independently, in sequence or concurrently, in some instances. When one sees an involvement in and about the pulmonary hilus, associated with a clogging of the lymph channels by dust phagocytes, depicted roentgenologically by increased shadow densities radiating from the hilus into the pulmonary midzone, an unproductive cough is usually present, with small moist râles in that region, which moisture may extend to the lower perimediastinal region, where lymph node fibrosis has occurred and a more or less complete blockage of this channel is present. Sometimes areas of exudation are seen in the region between the third and the sixth rib toward the periphery of the lung. This is evidenced clinically by a productive cough with moderate amounts of sputum, a roughening of the respiratory murmur throughout this area, and slight dyspnea on exertion. In the more extensive involvement of the later periods, some of the hyalinized areas that are found in silicosis undergo liquefaction, producing small cavities, which may coalesce to form large ones and when they occur at the bases of the lung may resemble bronchiectasis. Larger quantities of sputum result from such pathologic change. There are also interalveolar and bronchiolar interstitial changes which interfere with gaseous interchange, so that dyspnea becomes a more marked symptom. When secondary infection involves the cavities, it produces toxemic manifestations, evidenced by severe loss of appetite, intense fatigue and occasional night sweats. Concerning tuberculosis and silicosis, the determination of the time in which the patient developed tuberculosis is, in the presence of coexisting silicosis, very difficult, unless the history can be used as the determining criterion. Patients with silicosis who have an impaired resonance in the pulmonary area above the third rib, with moist râles limited to this area, in the absence of an acute respiratory infection should be considered as having tuberculosis. When the moisture extends throughout the lung or the lesion is largely a basal one, the presence of tubercle bacilli in the sputum is the only positive determining criterion, since the physical manifestations and shadow densities on roentgen films may simulate both disease conditions.

DR. E. P. PENDERGRASS, Philadelphia: One of the worst features of silicosis is the predisposition it may create to the contraction of certain respiratory infections, especially tuberculosis. The workers in any dusty industry are entitled to the same incidence of tuberculosis as the remainder of the civil population in the vicinity. When a dusty atmosphere associated with the industrial employment is productive of definite silicosis, the incidence of tuberculosis is considerably and obviously increased thereby. Silicosis comes under suspicion as a predisposing factor in the infectious process. This does not mean, however, that every case of tuberculosis in the industry has the infection brought about either primarily or secondarily through the agency of the dust. Any conclusions drawn should be submitted only after a careful correlation of the clinical studies, roentgenographic interpretation, occupational history, past history of the industry with relation to large groups of workers, and physical surroundings. The serial roentgen examination, if carefully performed, is of the utmost value in portraying the pathologic changes, but I am sure it is obvious that in a number of instances it is exceedingly difficult to arrive at a definite diagnosis. We have recently restudied our entire group of pneumonoconioses at the Hospital of the University of Pennsylvania and have recorded certain roentgenographic observations which may help in the determination of the presence or absence of a superimposed tuberculosis, and this is to be the subject of another presentation. These observations, if true in the majority of instances, may be of distinct value in helping to decide as to the disposition of an employee in a given occupation; furthermore, we are convinced that observations a certain group of workers in one industry cannot necessarily be accepted as a standard for an an entirely different industry.

DR. RICHARD H. JAFFE, Chicago: The different types of dust cause different forms of pulmonary lesions; and since in human cases of pneumonoconiosis one is usually dealing with mixtures of several kinds of dust, the resulting pathologic processes are, as a rule, combinations of the changes produced by the single components of the dust. The most common combination is that of quartz and coal. Pure silicosis is exceedingly rare. Among the inorganic matters that may enter the lung, silicon dioxide is particularly irritating. There are several factors that account for the irritating action of the silicon dust. This dust is very rich in the finest particles, which easily reach the alveoli of the lungs. The sharp angles of the fine quartz particles produce innumerable small traumas to the alveolar wall. There are many evidences which indicate that the quartz is gradually dissolved in the weakly alkaline tissue fluids. The specific silicotic lesion is a miliary nodule which consists of a dense, hyalinic center and a more cellular periphery that fuses with the stroma of the lung. The best method to demonstrate the silicon in the lung is micro-incineration, as recommended by Policard and his associates. In the earlier stages of silicosis the lung is studded with small, gray nodules, which are most numerous in the midportions of the lung with the best respiratory ventilation. The interlobular septums and the connective tissue about the bronchi are thickened and contain the characteristic nodules. In the advanced stages, large portions of the lung are found to be replaced by a very dense, deeply pigmented scar tissue, which feels like wood and cuts with great difficulty. It seems that it is only under the influence of a complicating tuberculosis that silicotic nodules develop in the lungs of granite cutters. In general, a considerable number of investigators believe that the silicotic nodules are practically always the result of the combined action of the quartz dust and tubercle bacilli. No doubt, silicosis greatly increases the disposition to tuberculosis and modifies its course but, according to my experience, inhalation of the finest quartz particles alone is sufficient to produce a progressing pulmonary fibrosis with nodular and nodose formations.

DR. C. O. SAPPINGTON, Chicago: Two statements in the paper by Dr. McNally are of particular significance: that any

lung containing more than 2 mg. of silicon dioxide per gram of dried tissue indicates that the subject has had undue exposure to a dusty atmosphere; that the blood of tuberçulous subjects contains more silicon dioxide than that of normal persons. The problems suggested here would involve relationships between the silicon dioxide content of the circulating blood, the content of pulmonary tissue both in subjects of tuberculous type and in those from dusty occupations, and the relationships between these facts, if any. It seems to me that the next step in this investigation would be to determine the silicon dioxide content of the blood in a group of tuberculous persons, in another group having a measured dust exposure and a clinical diagnosis of silicosis, and in a control group. By comparing the results of such a study, standards could probably be obtained for a clinical test that would quite likely be of greater relative value than quantitative examinations done on necropsy material. Efforts should also be made to find out the possible association between known periods of dust exposure, concentration and particulate distribution, and the silicon dioxide content of lung tissue. Through the establishment of these quantitative standards, and their association with or relationship to variable factors either within the body or in the industrial environment, the diagnosis of these conditions could be put on a better scientific basis and lead to the acquisition of a better type of factual evidence than it is possible to obtain at the present time.

DR. ROBERT T. LEGGE, Berkeley, Calif.: Dr. Lanza stated that a person can develop silicosis in two years. Dr. Sayers stated that it takes thirteen years. Investigators in South Africa state that it requires ten and one-fourth years. Of course these differences of opinion give a good deal of leeway to lawyers, particularly in medicolegal cases. Drs. Pancoast and Pendergrass state that a person can have silicosis and still not have fibrosis. It has been stated that the three stages that were formerly thought to be ideal, first, second and third stages of silicosis, are now no longer considered. It seems to me that the whole question of silicosis must be rewritten. Not long ago I did some original work in silicosis as a result of diatomaceous earth, and one of the things noticed in this particular form from a diagnostic point of view was the large percentage of clubbed fingers.

DR. J. J. SINGER, St. Louis: The burden of many legal cases has been actually forced on the medical profession. I think it places physicians in a very serious situation. All we can do is to state our observations as we find them. I think we must get in closer contact with the lawyers and come to an understanding as to what is expected of us and what we expect of lawyers. If the lawyers would teach us the legal value of our testimony, we could be of real service.

DR. C. F. N. SCHRAM, Beloit, Wis.: I was called on to drive 125 miles to give testimony in regard to industrial work and my opinion did not coincide with the information wanted. I was not put on the stand but a hurry call was sent to a pathologist who has never spent any time in industry and he testified as wanted. Three physicians who testified for the opposing side gave opinions which coincided with mine. The night before, twenty-six physicians meeting in the Rock County Medical Society voiced the unanimous opinion, which agreed with the observations of the three local physicians and with my own. There is only one thing to do and that is to stop the dust. It can be stopped more easily if a commercial feature can be made out of handling it. I learned recently that a certain company in the United States is buying finely divided silica dust in fifty carload lots.

DR. A. J. LANZA, New York: The length of time it takes to develop silicosis depends, broadly, as I tried to make clear, on the dosage of silica. Heavy dosage, steady work, quicker results; lighter dosage, intermittent work, slower results; in other words, miners who spend their summers in working in the harvest fields, and many of them do so, obviously will develop silicosis more slowly as compared with their fellows working in the mines twelve months a year. The development of silicosis is usually a matter of years, but, given an intense enough dosage, it may be a matter of months. I don't see that in that statement there is any reason for bewilderment. This emphasizes what another commentator said: that a physician, in trying to judge a patient of this type, must be familiar with the nature and circumstances of his occupation.

DR. R. R. SAYERS, Washington, D. C.: Drs. Pancoast and Pendergrass stated that one cannot make a diagnosis unless one has all the facts. One must have the individual's history, his occupational history, the history of the symptoms, the physical examination and the radiologic evidence.

DR. HENRY K. PANCOAST, Philadelphia: The great difficulty in this country with silicosis is the law and not the medical profession. We as physicians are a little lax because of a lack of thorough knowledge about it, but certainly our form of government is more at fault. We have to depend on every state passing some kind of silicotic compensation law. The states have been very slow in doing it and each one passes a different law, and it upsets industry and brings about a confusion. If the federal government had control of the situation, I believe that this question would have been settled long ago, but it is not going to be settled satisfactorily under existing conditions. The Public Health Service is willing to help, but is its help accepted by the different states? It is not. Another phase of the law that makes difficulties is that it accepts testimony given by different physicians before juries. If the expert testimony of physicians who are experts could be kept away from juries, I think that there would be less disagreement. That applies to other suits besides those of silicosis, and certainly silicosis acts, in my mind, will never operate properly or be satisfactory unless there is a medical board attached to each compensation board.

DR. WILLIAM D. MCNALLY, Chicago: I think silicosis is a depression disease and that is why physicians are seeing so much of it. Pneumonoconiosis is being claimed by a great number of people in Chicago. In the future there will appear a number of claims caused by inhalation of flour. Leather is another substance that is going to claim a few cases. In that instance the chemical examination will not be able to disclose how much flour there was or how much leather. When an autopsy can be performed, the silicon dioxide content of the lung is the deciding factor which cannot be denied.

URINARY TEST AS INDEX OF ABSORPTION OF GALLBLADDER DYE WHEN GIVEN ORALLY

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The oral method of administering gallbladder dye has failed to reach complete parity with the intravenous method primarily because it is impossible to make sure that the dye has been absorbed from the intestinal tract when given by mouth.

Further, although it has been shown that refinements [1] in the method of administering dye by mouth have tended to minimize the number of nonabsorptions, still in a given case it is impossible to make sure that the nonvisualization of the gallbladder is not due to nonabsorption of the dye.

Since it is probably physiologically impossible to make sure that anything given by mouth will be absorbed in all cases, we feel that the problem of oral dye administration and absorption can be greatly clarified if it can be proved in the questionable cases whether the dye has been absorbed. Obviously, this could be ascertained if repeated blood specimens were examined at suitable intervals after the administration of the dye by mouth, but this is well nigh impossible in private office and ambulatory patients.

From the X-Ray Department of Roper Hospital and the Department of Physiology of the Medical College of the State of South Carolina, Charleston, S. C.

1. Kirklin, B. R.: Necessity for Accurate Technic in Oral Cholecystography: Errors Attributable to Technical Lapses, Am. J. Roentgenol. **25**: 595 (May) 1931.

We had for some time felt that some portion of the sodium tetraiodophenolphthalein must be excreted in the urine, from the nature of the compound, and had actually begun some animal experimentation along this line when we found that it had already been established by an excellent piece of work by A. J. Delario.[2] Delario found that, while 90 per cent of the dye was being extracted from the blood by the liver cells, the kidneys were excreting the other 10 per cent.

Normally the urine does not contain iodine in detectable quantities, by the most refined methods of testing, since the average daily excretion by the kidneys is only between 25 and 50 gammas.[3]

We first began our test by having patients bring in three specimens of urine as follows:

Specimen 1. Before taking the dye. This is a control to make sure that the patient is not excreting iodine from some other source.

Specimen 2. Before going to bed; that is, about five hours after the dye has been taken.

Specimen 3. The first voided specimen the morning after the dye has been taken.

Since we failed to obtain a positive iodine test in any of the second specimens, this part of the test has been discontinued. The time interval after the dye has been taken is evidently not long enough for absorption and excretion by the kidneys.

The test is a modification of the original Kendall test. It is essentially one of oxidizing the iodine from its organic form (in the tetraiodophenolphthalein sodium), fusing, and liberating the iodine from its inorganic state:

To about 50 cc. of urine, from 1 to 2 Gm. of stick sodium hydroxide is added. The mixture is heated moderately, to prevent spattering, in an evaporating dish. When evaporation is nearly complete, exactly 1 Gm. of powdered potassium nitrate is sprinkled over the extract, and this mixture is fused at moderate heat until the carbon has all disappeared and the "melt" appears white. When the "melt" has cooled, 20 cc. of distilled water is added, in which the "melt" readily dissolves. The solution is then filtered and the filtrate is acidified with dilute sulphuric acid until blue litmus is turned red. About 0.5 Gm. of sodium nitrite is then added to the filtrate and the mixture is placed in a separatory flask. Five cc. of chloroform is added and the mixture shaken vigorously. A pink color in the chloroform layer indicates the presence of iodine.

A satisfactory test can be done with as little as 20 cc. of urine. About the only source of error is that the mass may be charred by too much heat, after the gram of powdered potassium nitrate has been added, and will not dissolve in the distilled water.

If Specimen 1 does not give the iodine test (ruling out the possibility of some iodine medication), a positive test of the specimen the morning after the dye has been taken must indicate that some of the dye, which contains 53 per cent iodine, has been absorbed from the intestinal tract and gotten into the circulation.

We have arbitrarily set up a colorimetric standard of 3 degrees of absorption:

1. *Good Absorption.*—This is indicated by a deep purplish pink and is the color that we have obtained as a routine in the normal gallbladder visualization. This color can be reproduced by dissolving the 5 mg. of resublimed iodine in 100 cc. of chloroform.

2. *Moderate Absorption.*—This is indicated by an ordinary pink and can be simulated by 2.5 mg. of resublimed iodine in 100 cc. of chloroform. We have obtained this degree even with excellent visualization of the gallbladder in patients with poor kidney function.

3. *Poor Absorption.*—This gives a very faint pink that is best seen against a white background, and the standard is made by dissolving 1.25 mg. of resublimed iodine in 100 cc. of chloroform. When the absorption is poor, we believe the examination should be repeated unless there is normal visualization of the gallbladder.

So far the only source of error we have encountered has been an erroneous index of the degree of absorption in patients with poor kidney function, as mentioned.

In case of nonvisualization of the gallbladder after the dye has been given by mouth, if the described test is positive there is no question of nonabsorption of the dye, and the gallbladder, liver, or duct system must be abnormal.

2. Delario, A. J.: Paths of Absorption and Excretion of Sodium Tetraiodophenolphthalein, J. Lab. & Clin. Med. **16**: 329 (Jan.) 1931.

3. Personal communication to the authors by Harry Von Kolnitz, chemist, South Carolina Food Research Laboratory, affiliated with the Medical College of the State of South Carolina.

THE PATHOLOGIC REACTION IN VARIOUS PNEUMONOCONIOSES

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Anatomic and roentgenologic studies of the lungs of persons exposed to various types of industrial dusts have demonstrated that inhaled foreign substances do not all produce the same kind of pathologic reaction. Present knowledge is limited by the lack of a sufficient amount of autopsy material to illustrate the evolution of all types of pneumonoconiosis, but the forms produced by pure chemical substances tend to fall into one of three categories. Such disease is predominantly either linear, nodular or diffuse in character. A linear pattern characterizes the general type of response to most inhaled inert foreign materials; nodular lesions are apparently confined to silicosis, while diffuse reaction is exemplified in asbestosis. Mixed patterns are produced by dusts such as granite, which is composed of several different elements. The stages in the reaction to these well known dusts will be analyzed in an attempt to explain the variations in the resultant pathologic picture. This can be done most concisely by considering in turn the various anatomic structures involved.

PHAGOCYTOSIS

Particles that elude the protective mechanisms of the upper respiratory tract reach the respiratory bronchioles and finer air spaces given off from them. At first there is a marked tendency for initial localization to occur in the subpleural air spaces. Within their lumens the particles are phagocytosed by free ameboid cells of the histiocytic series which originate in the nearby walls. The behavior of these cells is modified by the character of the foreign material with which they have to deal. With the majority of fine dusts the same cell continues to ingest particles until it can hold no more and as a consequence its power of locomotion is limited or destroyed. The cells that are grossly overloaded appear never to leave the air spaces but remain until they disintegrate and liberate the dust particles, which are again taken up by new phagocytes. Less heavily laden cells of the first or subsequent generations make their way along the walls of the air spaces until they reach the peripheral ends of the lymphatic vessels, which they enter by penetrating the cluster of lymphoid cells about the termination of these vessels. By this mechanism

From the Saranac Laboratory for the Study of Tuberculosis of the Edward L. Trudeau Foundation.

the air spaces are more or less effectively cleared of dust.

Of the materials that have been studied, phagocytosed silicon carbide tends to be held within the air spaces more or less indefinitely; much of the granite is also retained in situ, although many of the less heavily laden cells reach the lymphatic system; coal-containing cells migrate more rapidly.[1] Silica [2] belongs in a special category. Only a few particles of this material are ingested by each cell, and they are sufficiently irritating so that they stimulate ameboid activity. The active cells moving toward the lymphatic system collect in nodular masses about the lymphoid tissues at its periphery. Asbestos fibers also constitute another special type of foreign body.[3] Because of their shape and size, most of them are not inhaled into the terminal alveoli but lodge on the irregular surfaces of the respiratory bronchioles. They become surrounded by giant phagocytes, which carry them, for the most part, directly into the walls of the bronchiole. The lymphatic system seems to play little part in disposing of such fibers. In some of the human cases of asbestosis which have come to autopsy, sections of the lungs show large amounts of black granular pigment in addition to the fibers. This granular material is partially eliminated through lymph vessels.

LYMPHATIC ELIMINATION

The dust cell that enters a lymph vessel should theoretically remain within the lumen until it either settles out in lymphoid tissue along the course of the vessel or is transported to the tracheobronchial lymph node at its termination. When the number of particles is excessive, physiologic mechanisms are inadequate and many phagocytes with their ingested material pass through the wall of the vessel into the surrounding areolar tissue. Such abnormal migration is intensified by obstructive lesions in the intrapulmonary and mediastinal lymphoid tissues and by hypothetic alterations in the permeability of the lymphatic endothelium, although the latter has not yet been demonstrated. The presence of foreign particles in perilymphatic areolar tissue will provoke a reaction, the severity of which varies with the character of the material concerned; it may consist of an infiltration of phagocytes and lymphoid cells or it may take the form of granulation tissue which perhaps organizes as scar. In any event, such a reaction is linear in distribution and it tends to thicken the structures through which the lymphatic trunks pass; namely, the bronchi, pulmonary artery and veins, the interlobular septums and the pleura.

This type of linear perilymphatic reaction is an essential part of the response to most inhaled dusts and with many of them it is practically the only lesion demonstrable. In the case of silicosis it occurs in the early stages of the disease, but it is later overshadowed by nodular formations. Its importance in asbestosis is not altogether clear for lack of sufficient material for study. Early human and experimental animal disease shows no apparent participation of the lymphatic system. In the late stage human cases there is dense fibrosis in the position of the lymph vessels, but the same reaction also involves all other portions of the pulmonary stroma. Its effect is visualized in roentgenograms of many forms of pneumonoconiosis as an accentuation of the linear shadows cast by the blood vessels.

1. Gardner, L. U.: Am. Rev. Tuberc. **20**: 833-875 (Dec.) 1929.
2. Gardner, L. U.: J. Indust. Hyg. **14**: 18-38 (Jan.) 1932.
3. Gardner, L. U., and Cummings, D. E.: J. Indust. Hyg. **13**: 65-114 (Feb., March) 1931.

LYMPHOID TISSUE

As has been noted, phagocytes pass through lymphoid tissue to enter the lymph vessels, and they encounter numerous collections of this nature along the course of the vessels. In the absence of infection, most dusts, such as coal or silicon carbide, do not tend to remain within the intrapulmonary lymphoid tissues but accumulate in the tracheobronchial nodes into which the lymphatics empty. Quartz-containing cells, on the other hand, collect in masses in and about the lymphoid tissues. The physicochemical properties of this dust stimulate the development of fibrous tissue within the nodule. Such formations encroach on and compress the adjacent lymph vessels, so that the flow of lymph is impeded. As a result there is a progressively increasing tendency for the phagocytes to migrate outward through the walls of the vessels, as already described.

The formation of nodules in lymphoid tissue is seen in roentgenograms of early silicosis as a fine beading along the trunks.

PULMONARY PARENCHYMA

The initial accumulation of phagocytes in the terminal air spaces, and the slight amount of associated proliferation in the adjacent alveolar septums, constitute a parenchymatous reaction, which characterizes the early stages of any form of pneumonoconiosis. In silicosis this effect is soon overshadowed by more pronounced changes in the trunks, but in the less marked disease produced by silicon carbide or aluminum oxide it continues to be one of the chief evidences of reaction. While the individual areas of parenchymatous disease are relatively insignificant, the superimposition of great numbers of such lesions is sufficient to intercept the x-rays and cast a faint haze on the film. The change is most marked at the periphery of the lung, particularly in its midportions, because of the tendency of inhaled particles to localize beneath the pleura.

The fibrous element in asbestos dust apparently exerts its major effect in the parenchyma of the lung. The phagocytosed fibers are carried into the walls very near the place in which they were ingested and there fibrous proliferation is initiated. If one examines a thick, free hand section of an asbestosis lung that has been properly cleared, it will be noted that there is fibrosis in every portion of the pulmonary framework. The alveolar walls are thick and dense, with an appreciable diminution of the size of the lumens. The pleura and intralobular septums are very thick and encroach on the adjacent air spaces. The trunks are likewise heavy and distorted. In ordinary thin sections, the amount of fibrosis in relation to uninvolved elements is so great that a proper orientation is often impossible. In a preliminary report on the early stages of asbestosis [3] produced in animals by a dust composed only of fibers, it was prophesied that bands of contracting fibrous tissue about the respiratory bronchioles might result in atelectasis of the air spaces peripheral to these lesions. Subsequent observations have not substantiated this contention. Evidence now available supports the view that in asbestosis the fibrosis develops irregularly about all points at which the inhaled fibers originally lodged. The lack of participation of the lymphatic system in distributing this dust is indicated by the insignificance of the changes in the tracheobronchial nodes. In certain industries, as already mentioned, there may also be contaminating substances which excite perilymphatic reaction and a limited amount of fibrosis in the mediastinal nodes. In such

cases no fibers or asbestosis bodies are found in association with the lymphatic system.

Roentgenographically, asbestosis is characterized by a diffuse haziness throughout the lower two thirds of the lung fields, giving the picture a ground glass appearance. Linear markings are much less prominent than normally and no nodular shadows are visible.

A more marked parenchymatous reaction characterizes the picture of silicosis after lymphatic obstruction is well developed. Since the dust can no longer be eliminated by physiologic mechanisms, the phagocytes carry it directly into the delicate framework of the functional portion of the organ. A proliferation of connective tissue ensues, which results in a diffuse interstitial fibrosis complicated by localized nodule formation. The point of origin of these peripheral nodules is not always apparent; frequently they develop about minute collections of lymphoid cells, but it is possible that they may also start at any point in the framework of the lung.

Where the atmospheric concentration of silica is extremely high, and particularly when exceedingly fine particles preponderate, it appears that a so-called acute form of silicosis can develop within a period of from twelve to eighteen months. This is quite within the realm of possibility, for guinea-pigs exposed for eight hours daily to concentrations of 200 million particles per cubic foot of air (light field counts) develop characteristic disease in from ten to twelve months. Man may also react in a similar manner, but each case must be carefully scrutinized to eliminate a previous exposure to siliceous dust and the presence of the complicating factor of tuberculosis. In the sections from eight such cases which have been submitted to me there was evidence of tuberculous involvement in all. However, these were fatal cases; the living can be observed only by roentgenogram. From the character of the microscopic lesions, it would appear that the detection of tuberculosis in conjunction with acute silicosis by roentgenology might not always be a simple matter.

In this acute form of the disease the reaction is primarily parenchymatous. The lesions develop so rapidly in the functional portion of the lung that the preliminary manifestations of perilymphatic fibrosis, beading of the trunks due to small nodules developing about associated lymphoid tissues and the gradual enlargement of the mediastinal lymph nodes are entirely overshadowed. Large parenchymatous nodules and diffuse interstitial fibrosis dominate the picture from its onset.

From this survey of the pathology of pneumonoconiosis it is seen that the reaction to dust may be divided into five general phases: (1) early diffuse parenchymatous disease due to accumulation of phagocytes and local inflammatory changes in the immediately adjacent connective tissues; (2) linear perilymphatic proliferation; (3) beading of the trunks due to chronic proliferative changes in associated lymphoid tissues; (4) enlargement of the mediastinal lymph nodes due to proliferation of the local connective tissues, and (5) late chronic proliferation and nodule formation in the finer connective tissues of the pulmonary parenchyma. Different phases of this picture are accentuated by various types of pure dust. Silica produces all of them, but some dusts are capable of eliciting only a few of the changes. Silica promotes the formation of nodules, both the small variety along the trunks and the larger parenchymatous lesion, but linear accentuation of the trunk marking and diffuse parenchymatous reaction are also present. Pure fibrous asbestos produces a lesion characterized by a generalized fibrosis involving primarily the finer connective tissues of the pulmonary framework. Silicon carbide in experimental animals[4] excites a moderate degree of parenchymatous reaction and some linear fibrosis. The other common industrial dusts generally set up a reaction that is characteristically linear, with more or less diffuse changes in the parenchyma but no nodule formation.

These differences in reaction are explained by the localization of the various types of particles effected through the activity of the phagocytes, by the degree of impairment of the lymphatic system, and by the capacity of the various kinds of particles to set up proliferation in the connective tissues.

MIXED DUSTS

A good example of the effect of mixed dusts is presented by the lungs of anthracite coal miners. Their various occupations subject them to the inhalation of coal and silica in different proportions. When the coal dust is adulterated with only a small amount of silica, the reaction resembles that to pure coal. It is predominantly perilymphatic in type, although the connective tissue tends to become more fibrous than that produced by coal alone. If, on the other hand, the miner has worked largely in hard siliceous rock, the picture is that of silicosis with nodular fibrosis, which is more pigmented than in uncomplicated silicosis. The majority of observers have found no support for the Haldane-Mavrogordato hypothesis that coal dust protects against the action of silica.

Another common dust that should probably be classed as mixed is granite. The material from Barre, Vermont, has been most extensively studied. It contains about 35 per cent of free silica as quartz and 60 odd per cent of silicates in the form of feldspar and mica. It has been customary to disregard the latter elements and to take into consideration only its free silica component. In my opinion this view will probably be modified after further study, for there are certain peculiarities about the reaction to this substance which have not received proper emphasis.

The basic study made by the United States Public Health Service of the Barre granite cutters[5] demonstrated that in roentgenograms nodular lesions did not become manifest until the exposure had been continued for many years and then only when a tuberculous complication had developed. Previous to this event, evidences of disease were confined to an accentuation of the linear markings in the lungs together with an increase in the size and density of the hilar shadow. In the report it was emphasized that in this respect the "silicosis" of granite cutters differed from that produced by other siliceous dusts. Furthermore, it was noted that complicating tuberculosis appeared much later in the disease due to granite dust than in that produced by pure silica.

I collaborated in the Barre study and reported on the pathologic aspects of eight pairs of granite cutters' lungs obtained by the field investigators. All but three of them showed active tuberculosis accompanied by extensive nodular fibrosis. One of the exceptional cases (A-25-25) is of especial significance in this connection. This man had not worked at Barre but in the

4. Gardner, L. U.: Am. Rev. Tuberc. **7**: 344-357 (July) 1923.
5. Russell, A. E.; Britten, R. H.; Thompson, L. R., and Bloomfield, J. J.: Pub. Health Bull. 187, Washington, D. C., Government Printing Office, 1929.

nearby town of Bethel. According to Dale,[6] Bethel granite is a quartz monzonite in which quartz is more abundant than other constituents, whereas the Barre variety is a biotite granite, in which feldspar predominates. The man in question had cut granite for twenty-eight years, whether by hand or by pneumatic tool is unknown; but presumably he had had a very considerable exposure to dust. He died by drowning while intoxicated. The surface of his lungs was coarsely mottled with black pigment and there were clusters of small, slightly elevated, yellow-white nodules located chiefly in the pleura over the middle and lower parts of both lungs. On section, no nodular lesions could be discovered. The trunks and interlobular septums were unduly prominent and there were ill defined areas of pigmentation without fibrosis scattered here and there through the lung. The tracheobronchial lymph nodes were only slightly increased in size, and they were firm, black in the center and gray at the periphery. Microscopic examination demonstrated that the small pleural nodules were characteristic of silicosis. They varied in composition from cellular connective tissue to hyaline fibrosis. The former type particularly contained great numbers of dust-filled phagocytes. Elsewhere the lung showed not even the earliest stage of a silicotic nodule. There was little dust and no reaction in the lymphoid tissues of the trunks. The major portion of it was collected within collars of cellular connective tissue about the lymphatic trunks in the walls of blood vessels and, to a lesser extent, of the bronchi and in the interlobular septums. In the tracheobronchial lymph nodes there were circumscribed hyaline nodules scattered here and there through the lymphoid tissue. Evidence of tubercle was entirely lacking. In the fat and areolar tissue about the afferent lymph vessels there were large collections of dust-filled phagocytes.

Another man (case 452) died of generalized lymphoblastoma after cutting granite for two and one-half years with a hand pneumatic tool. His lung was extensively involved by tumor and showed no nodular lesions due to dust. The only evidences of pneumonoconiosis were perilymphatic accumulations of dust in the lung and pigmented cellular connective tissue in the mediastinal lymph nodes. Traces of tuberculosis were lacking.

A third man (case 522) may be mentioned for contrast. He had worked irregularly in Barre on a surface machine for twenty years. His disease was complicated by tuberculosis but the process appeared to be quite inactive. However, the evidence is incomplete as the upper lobe of one lung had been left in the body because it was so firmly adherent to the chest wall. In the portions submitted for examination, no caseous tubercles could be discovered in the lungs or lymph nodes; calcified nodules, however, were very abundant. In this case small silicotic nodules, not larger than 1 mm. in diameter, were widely distributed throughout all portions of the lungs, with conglomerations of such foci immediately beneath certain portions of the pleura. The trunks and septums were very markedly thickened by collars of pigmented cellular connective tissue, and the lymphoid nodules at points of bifurcation were replaced by hyaline fibrosis.

The first case is of particular significance because the man had been exposed for a long time to a granite of a higher free silica content than the Barre variety and yet he had failed to develop a generalized nodular silicotic reaction. The only pulmonary nodules were small ones located in the pleura, where the deep and superficial lymphatics join one another. Many of these lesions were composed of cellular connective tissue, which is characteristic of the earlier phases of silicosis. The most striking change was the pigmented cellular connective tissue about lymphatic trunks. In the lymph nodes, in the mediastinum, there were a few typical hyaline silicotic nodules but must of the lymphoid tissue was still intact. The second case showed an early stage of the same type of reaction without the formation of any nodules whatever.

The dominant feature of the pathologic picture in both these cases was not nodular hyaline fibrosis but perilymphatic cellular connective tissue formation. This reaction has been shown to be characteristic of nonsiliceous dusts. When tuberculosis came into the picture, both in the probably inactive form exemplified by the last case described and in the active infections observed in the other five cases of the series, nodular lesions were formed without stint throughout all portions of the lung and the picture resembled that seen in typical silicosis.

A suitable pathologic study of human cases of granite pneumonoconiosis has not been reported, for autopsy material is limited. However, I have unpublished experimental data which tend to substantiate the conditions found in the human cases just mentioned. In an earlier paper [7] it was shown that exposures for seven months to heavy concentrations of granite dust would not produce nodular fibrosis in guinea-pigs. With pure quartz [2] dust, on the other hand, such lesions did develop. The granite produced pigmented cellular connective tissue in the tracheobronchial nodes and along the course of the large lymph vessels within the lungs. If infection with attenuated tubercle bacilli was superimposed, circumscribed areas of cellular fibrosis developed in addition to the typical tuberculous lesions. Further experiments have since been made in which daily exposures were continued for two years to concentrations of over 400 million particles per cubic foot of air (light field counting method). These guinea-pigs likewise failed to develop silicotic nodules, but the linear reaction about the lymphatic vesels was even more marked. There was no attempt to combine these exposures with tuberculous infection. Two animals which survived slightly more than a year after the two years dust exposure had been completed were of particular significance. One of them died of epizootic pneumonia and its companion was then killed. The former, with the infection, exhibited circumscribed nodules of pigmented cellular fibrosis in certain portions of its lungs. The other animal had no evidence of infection and it showed only linear perilymphatic cellular connective tissue increase. In still other experiments [1] to demonstrate the effects of inhaled dust on partially healed primary tuberculous infection, it was shown that 74 per cent of the animals inhaling pure silica reactivated their tuberculosis, while with granite only 26 per cent developed progressive infection. This is also in accord with the clinical experience quoted.

These observations may be evaluated from two points of view. It is generally assumed that only the quartz or free silica content of granite dust is of significance in the production of disease; that the other components act as inert diluents, which reduce the concentration of silica which is inhaled, and that because of such dilution granite pneumonoconiosis develops much more

6. Dale, T. N.: Bull. 404, U. S. Geological Survey.

7. Gardner, L. U.: Am. Rev. Tuberc. **4**: 734-755 (Dec.) 1920.

slowly than that produced by pure silica. On the other hand, it is equally possible to assume that the nonsiliceous components of granite dust may of themselves excite biologic reaction and that possibly they may modify the characteristic effects of pure quartz.

The data just presented indicate that a granite pneumonoconiosis does not begin with the formation of nodules in the lymphoid tissues as in ordinary silicosis but that it presents only the characteristic perilymphatic proliferation of the nonsiliceous dusts. The observations in the case of the Bethel granite cutter who had worked as long as twenty-eight years would suggest that in the absence of infection the predominant lesion continues to be of the nonspecific linear type. This contention does not depend solely on the observations in a single autopsy but it is supported by the large group of roentgenologic observations in the Barre study and by experimental disease produced in guinea-pigs. Furthermore, both clinical and experimental evidence suggest that the "silicosis" of the granite workers does not create a condition of increased susceptibility to tuberculosis as quickly as that resulting from disease produced by pure silica.

As a working hypothesis, it is proposed that in the absence of infection the nonsiliceous components of granite dust are largely responsible for the reaction that is produced and that possibly by their presence the free silica is held in check. When tuberculosis or to a lesser extent other infections complicate the picture, the free silica cooperates with the living organisms to produce a nodular type of reaction. Such a concept is not new, for "infective silicosis" has played a prominent part in the speculations of the South African observers.[8] They and others have recognized that, in combination with tuberculosis, silica produces nodular reaction much more readily than when it is acting alone. Some have even gone so far as to maintain that in all silicosis there is an element of infection; this, however, is not necessarily true, for typical silicotic lesions have been repeatedly produced in uninfected animals of many species.

To prove the proposed hypothesis it will be necessary to study much more autopsy material from granite cutters dying without tuberculosis and to perform experiments in which animals are subjected to the inhalation of quartz dust combined with proper amounts of feldspar and mica. In an attempt to evaluate the effect of small amounts of silica such as has been assumed for granite, an experiment is now in progress in which animals are being exposed to quartz dust for only one hour each day over a period of several years. These observations are presented to suggest that caution should be exercised in drawing inferences as to the reaction to any combination of dusts until they have been intensively studied both individually and in association with one another.

8. Irvine, L. G.; Simson, F. W., and Strachan, A. S.: Silicosis, International Conference at Johannesburg, 1930, Geneva, 1930.

Maxillary Sinusitis. — Rabbits with experimentally produced maxillary sinusitis were successfully treated with an extract of the suprarenal cortex. After three intramuscular injections of the extract, the rabbits showed no evidence of infection of the sinus mucosa on microscopic examination. The extract of the suprarenal cortex produced a consistent decrease in hemoglobin and a change in the alkali reserve.—Wenner, W. F.: Effect of Extract of the Suprarenal Cortex on Maxillary Sinusitis in the Rabbit, *Arch. Otolaryng.* **17**:774 (June) 1933.

Clinical Notes, Suggestions and New Instruments

RELIEF OF CARDIAC DYSPNEA BY DRINKER RESPIRATOR

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The chief use of the Drinker respirator in the past has been in the treatment of respiratory weakness or paralysis. It has been employed most often in the treatment of two types of patients: (1) adults and children suffering from respiratory weakness due to anterior poliomyelitis and (2) new-born infants suffering from birth asphyxia.

During the observation of patients in both of these groups, one of us (D. P. M.) has been struck by the apparently beneficial effect of artificial respiration on the circulation. The rate and volume of the pulse of adults has been improved greatly by the treatment, and the cardiac action of new-born infants has been improved and maintained for long periods without spontaneous respiration taking place. Such clinical observations and additional experimental ones on asphyxiated animals have suggested that the respirator might be of some value in the treatment of patients in whom the failure of the circulation is the chief disturbance, especially if it is accompanied by respiratory embarrassment. On the basis of these observations, the patient with cardiac dyspnea whose case is described in this report was subjected to artificial respiration in a Drinker respirator.

REPORT OF CASE

W. P., a Negro man, aged 58, a laborer, admitted to the medical service of Dr. H. W. Schaffer at the Philadelphia General Hospital, April 4, 1933, complained chiefly of (1) shortness of breath, (2) palpitation of the heart and (3) insomnia. His previous hospital record showed that he had been discharged only a few weeks previously with a final diagnosis of aortic regurgitation, myocardial degeneration, hypertension and syphilis. On physical examination, he was found to have slight edema of the extremities but no pleural effusion or other extracardiac mechanical cause for his difficulty in breathing.

April 24, he was unable to lie flat on his back for more than a minute and a half without becoming severely dyspneic. On this day, he was given three and one-half hours of continuous artificial respiration in a Drinker respirator. Throughout the treatment he lay flat on his back and during this time did not experience any dyspnea. At the end of the first twenty minutes of artificial respiration the patient volunteered the information, in a somewhat worried tone of voice, that "his heart had stopped beating." Prior to the start of treatment, palpitation had been continuous.

He continued to feel no cardiac pulsation for a period of approximately two hours after he was removed from the machine. During the treatment he slept for short intervals.

The experiment resulted in what seemed to be two significant observations: 1. The dyspnea disappeared during the treatment, as indicated by the patient's comfort, even though he was lying flat on his back; but it returned again two minutes after the artificial respiration was stopped. 2. The palpitation also disappeared as a result of the treatment but, unlike the dyspnea, was kept in abeyance for a much longer period (two hours) after the treatment was stopped.

The success of the treatment probably depended on a number of factors: 1. The patient was relieved of the work necessary to carry on respiration. 2. The chest was expanded mechanically to a greater degree than spontaneously, and sufficiently to maintain a satisfactory pulmonary aeration. Also, the negative pressure created in the chest probably aided the return flow of blood to the heart.

These observations point to the possible value of the respirator as an emergency measure for the treatment of patients with acute cardiac failure. By placing such patients in a respirator, it might be possible to give them immediate cardiac assistance during their most critical period and before it becomes possible to digitalize or otherwise treat them.

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METASTATIC PANOPHTHALMITIS FOLLOWING PNEUMOCOCCIC OTITIS MEDIA

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A boy, aged 4 years, who was anemic, was seen in consultation because of difficulty in maintaining drainage from a suppurative right otitis media of four weeks' duration. The drum had been incised at the end of the second week and again at the end of the third week.

At the time that the child was examined, the temperature was 102; the patient was lethargic and irritable. When the drum membrane incision was enlarged there appeared a quantity of thick pus under pressure. At this time it was noted that the left eye was sensitive to light and that the pupil was contracted. No surface lesion could be detected even after staining with fluorescein. A culture taken from the ear revealed the pneumococcus as the offending organism. On the succeeding five days the eye became progressively worse, the cornea became clouded, the globe became inflamed, pus appeared in the anterior chamber, and finally there developed a typical ring abscess of the cornea, and an anterior staphyloma. The right eye remained normal and there were no other metastatic foci. The eye ruptured through the bulging cornea. Culture revealed the pneumococcus as the organism in the secondary lesion. The involved eyeball was sunken and shapeless, and the conjunctival sac was filled with pus. An enucleation was done. The discharge from the ear ceased after ten days, and the patient made a steady gain.

Metastatic ophthalmia develops through septic emboli which become arrested in the vessels of the choroid or retina. The nature of the inflammation set up depends mainly on the organism. Pyogenic organisms cause a purulent inflammation which generally passes into a panophthalmitis. It is these inflammations that constitute metastatic ophthalmia in the narrower sense of the term. Metastatic ophthalmia is produced either by ordinary pyogenic germs, among which the streptococcus ranks first and the pneumococcus second, or by bacteria that are specific for certain definite diseases; e. g., meningococcus, pneumobacillus, influenza, typhoid. The diseases caused by these bacteria, and above all puerperal fever and ordinary pyemia, are the main cause of metastatic ophthalmia. Sometimes, however, as in a slight attack of influenza or a small purulent focus somewhere in the body, the original disease may develop in so mild a form that it is overlooked and the panophthalmitis apparently develops spontaneously. In children, suppuration of the umbilical cord and sometimes vaccination may give rise to metastatic ophthalmia. Von Hippel reported one case caused by gonorrhea.

The bacteria that get into the vitreous grow abundantly in it but do not ordinarily pass into the inner coats of the eye. The purulent inflammation of the latter depends, therefore, on the remote action of the bacteria in the vitreous. The inflammation consequently affects mainly the inner surfaces of these membranes, i. e., the retinal coating of the ciliary body and the retina itself, so that the name endophthalmitis is a proper one for this sort of inflammation. When bacteria are particularly abundant or violent, necrosis of the coats of the eye develops, starting from their inner surfaces. Necrosis of the cornea leads to the entrance into it of leukocytes and to a demarcating inflammation with the clinical picture of a ring abscess. Necrosis of the inner coats of the eye in the posterior segment affects first the retina, then the choroid, and sometimes also the sclera, paving the way for perforation.

The pathologist's report was as follows:

"The collapsed eyeball was partly filled with clotted blood and the cornea replaced by seminecrotic hemorrhagic tissue resembling soft granulation tissue. Microscopically the sections revealed complete destruction of the lens and cornea. These were replaced by a seminecrotic tissue fused with the iris and ciliary body and densely infiltrated with polymorphonuclear leukocytes. Posteriorly, the sclera and choroid displayed perivascular lymphocytic infiltration and hemorrhage. Most of the retina was separated anteriorly and posteriorly and lightly infiltrated with leukocytes. Diagnosis: Acute suppurative panophthalmitis."

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Special Article

MIGRAINE

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Thanks to the financial support of the Josiah Macy, Jr., Foundation, Riley [1] has been enabled to contribute a review of 100 pages covering all important contributions from antiquity to the year 1932. Since then, a valuable article by Critchley and Ferguson [2] has appeared as the opening paper of a discussion at the Harveian Society of England.

Riley defines migraine as "a periodic incapacitating headache culminating in nausea or vomiting, often preceded by visual disturbances, followed by sleep and occurring against a background of relatively perfect health." Riley makes the reservation that this definition is not an absolute one, since many cases fail to present any one or several of these characteristics.

The history of migraine does not begin with Hippocrates but in the first century of the Christian era with a description of "heterocrania" by Aretaeus of Cappadocia. About fifty years later Galen introduced the term "hemicrania." During the disintegration of Latin in the following centuries the word was corrupted into "hemigranea," "emigranea" and migranea, and finally the French word "migraine" became stabilized.

PERSONAL CLINICAL OBSERVATIONS

I have assembled the available data concerning 270 patients seen in my private practice. There were 75 males and 195 females. Most of them were of adult age, many at middle life or beyond, when first seen. A special effort was made to determine the age at the onset. It was found that in 151 cases (56 per cent) the onset was at or before the age of 16 years. This figure is fairly accurate, but the average age at onset, also computed at 16 years, is only approximate. In the large number of cases in which the patients said they had suffered from headache "as long as they could remember" or "from childhood," the onset was arbitrarily placed at 10 years. Of the women, 65 were single and 130 married or widowed when they were first seen. A history of more or less typical migraine in one or both parents was obtained in 153 cases (57 per cent); namely, in both parents in 12 cases, in the father in 35, and in the mother in 105; of migraine in one or more brothers and sisters in 80 cases (29 per cent), and in a grandparent in 22 cases. This last figure, or 8.1 per cent, is probably many times too small, since very few people know about the headaches of their grandparents and it must be remembered that migraine rarely persists to old age, at which epoch most persons know their grandparents, if at all. Compared with these figures, others relating to near relatives are trifling. Epilepsy was present in both parents and a brother of one patient in whom epilepsy developed, and in the mother of one other patient. Diabetes in a parent existed in four cases; asthma or hay fever or both in one parent of two and in a brother or sister of four patients. Urticaria in a sister was recorded twice.

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1. Riley, H. A.: Bull. Neurol. Inst. New York **2**: 429 (Nov.) 1932.
2. Critchley, Macdonald, and Ferguson, F. R.: Lancet **1**: 123 (Jan. 21), 182 (Jan. 28) 1933.

The following features in the 270 cases are recorded: The headache was unilateral in fifty-six cases. Eye symptoms included scintillating scotoma in sixteen cases, blurring or "cloud before the eyes" in ten, pain in the eyes in seven, swelling in three, transient hemianopia in three, transient diplopia in two, iritis in two, and marked lacrimation in two. Convulsions occurred in eight patients, unconsciousness without convulsion in one and fainting in two. Vascular disorders were manifested by hypertension in fifteen cases, hypotension in three, cerebral hemorrhage in four, meningeal hemorrhage in four and paroxysmal tachycardia in two. Vertigo was a prominent part of the attacks in thirteen cases. Attacks of edema were recorded in four cases, urticaria in six, asthma and hay fever in only one. Twenty-five patients complained of being "always tired" or having had "nervous prostration." Transient aphasic symptoms, amnesia or confusion existed in five cases. Hyperthyroidism existed in eight cases, hypothyroidism in two.

One surprising difference between the sexes is in their exposure to surgery. Among my seventy-five male patients, two had had the appendix removed and seven the tonsils, while of the 195 women nineteen had had appendectomy and twenty-one tonsillectomy. In addition, nine women had had gallbladder operations and three thyroidectomy, as against none in the men. In fifteen women, one or more ovaries were removed and in nine all or part of the uterus. Five had had operations for fixation of the uterus, four repair of lacerations and four curettement. Two had pelvic operations of unknown nature, and one had had an operation for salpingitis. Against this, the men could show only one operation for undescended testicle and one for hydrocele. The men lead in the percentage of hemorrhoid operations, each group having had three.

This record of operations is probably not complete, as the compilation was an afterthought stimulated by the report of Moehlig,[3] whose sixty-nine female patients could boast thirty-two laparotomies, thirteen thyroidectomies, three operations for cystic mastitis and one for carcinoma of the breast. Of the thirty-one males, six had had appendectomy and two thyroidectomy. Buchanan [4] has reported a larger series in which 75 per cent of the patients had had futile operations.

COMMENT ON MIGRAINE STATISTICS

There is essential agreement on three points: (1) the great frequency of migraine in parents and offspring, (2) the onset in early life and (3) the greater prevalence in women. All agree that at least twice as many women as men consult physicians for migraine. However, the wise Sir William Gowers said: "The preponderance of females has been greatly exaggerated." Recently, Allan,[5] on the basis of theoretical considerations concerning heredity and a canvass of a group of about 100 married couples, concluded that "the incidence of migraine is the same in men as in women, but, clinically, one sees more women than men with migraine, because the headache is more often severer in women."

Here agreement ends, owing largely to divergence in the interest and point of view of observers and because of lack of a clear-cut distinction between migraine and other forms of headache. In the past, the ophthalmologist, the rhinologist, the gynecologist and the man who thought he knew the meaning of "autointoxication" each claimed the whole field. Now the endocrinologist, the allergist and the neurosurgeon have replaced the former more simple-minded specialists, and the psychoanalyst is just beginning to look in. My personal hope is that the colloidal chemist also will enter the field and bring in an entirely new point of view.

CLINICAL TYPES

The clinical types are many, run more or less together and depend mainly (1) on the character and distribution of the three cardinal symptoms, headache, nausea and ocular disturbances, and (2) on the presence of sundry superadded features emphasized differently according to the observer's point of view. I shall not spend any time on the variations in character and location of the headache, on a description of the familiar scintillating scotomas, on the well known relation to menstruation in women or on the tendency of the attack to end in sleep. Instead I shall discuss certain associations of migraine, each of which has given rise to special theories of pathogenesis and therapy.

RELATION TO EPILEPSY

Statistics show only a small percentage of cases of epilepsy in the ancestors of migraine patients but a large proportion of migraine in the ancestors of epileptic patients. For instance, epilepsy in a parent was recorded only twice in my 270 migraine cases, while in a similar study of 200 office patients with epilepsy [6] migraine in a near relative existed in fifty-six cases, or 28 per cent. Twelve of these patients had convulsions following head injury, and the parents of four, possibly five, of these had migraine. Ely [7] found 71 per cent of migraine heredity in migraine patients, 60 per cent in epileptic patients and 17 per cent in normal controls. On the other hand, epileptic heredity existed in only 5.7 per cent of migraine patients, 14 per cent of epileptic patients and 7 per cent of normal controls. Of his 171 patients with convulsions, 15.2 per cent suffered from migraine and 7.6 per cent of his 104 migraine patients had convulsions. Among my 270 migraine patients, eight had convulsions at times, but with one exception the convulsions were incidental and much less annoying than the headaches.

In his treatise on migraine, Flatau [8] states that, in thirty-six of his group of 500 migraine patients, convulsions developed. In most of his cases as well as in mine the migraine had appeared in early life and the convulsions much later. I recall one woman who was subject to migraine at her menstrual periods until the menopause, when the headaches ceased and epileptic attacks set in. It is particularly in ophthalmic migraine that convulsions are prone to occur. Phillips,[9] who wrote an article on epileptic manifestations in migraine, believes that late occurrence of convulsions in such cases is due to cardiovascular changes. He reports cases, one with a necropsy, in support of it and calls attention to the relative frequency of convulsions at the menopause in women subject to migraine from youth. According to his experience, patients with migraine "are much more subject to the development of arterio-

3. Moehlig, R. C.: Endocrinology **15**: 11 (Jan.-Feb.) 1931.
4. Buchanan, J. A.: Surg., Gynec. & Obst. **38**: 638 (May) 1924.
5. Allan, William: The Sex Ratio in Migraine, Arch. Neurol. & Psychiat. **27**: 1436 (June) 1932.
6. Bassoe, Peter: M. Clin. North America **7**: 519 (Sept.) 1923.
7. Ely, F. A.: The Migraine-Epilepsy Syndrome, Arch. Neurol. & Psychiat. **24**: 943 (Nov.) 1930.
8. Flatau, E.: Handb. d. Neurol. **5**: 367, 1914.
9. Phillips, John: The Relation Between Migraine and Epilepsy, J. A. M. A. **78**: 1960 (June 24) 1922.

sclerosis, high blood pressure and chronic arterial nephritis than are other patients."

RELATION TO CEREBRAL VASCULAR LESIONS

I can subscribe to the statement by Phillips that migraine to some extent predisposes to vascular lesions in the brain, both thrombotic and hemorrhagic. Thus, when after years of intermittent hemianopia in the attacks permanent hemianopia develops, it is reasonable to suppose that thrombosis has taken place. A woman patient of mine subject to migraine from the age of 12 years died of hemorrhage in the internal capsule at the early age of 37. A man with migraine, with no evidence of syphilis, nephritis or heart disease and with normal spinal fluid, had two attacks of transient left hemiplegia at 41. His systolic blood pressure was 140 at the time of the first attack and 100 at the second one. Spontaneous subarachnoid hemorrhage in particular appears to be relatively frequent in migraine victims, even youthful ones. Goldflam,[10] who advocates this view, relates instances of such hemorrhages at the ages of 10 and 20 years and got a history of migraine in five of thirteen cases. Adie [11] cites other cases in point, as do recently Critchley and Ferguson.[2] On the other hand, Ehrenberg [12] encountered migraine in only one of the seventy-two cases which form the basis of his monograph on subarachnoid hemorrhage. It is known that such hemorrhage often occurs in cases of aneurysm of the circle of Willis, from congenital defects in the vessels, and the previous migraine-like headaches in such cases may have been directly due to the aneurysm.

RELATION TO PAROXYSMAL TACHYCARDIA

There are two cases of paroxysmal tachycardia in my series, one in a woman, seen at 48, whose mother had migraine and who had suffered from sick headaches from early youth. The headaches stopped at 43 and were replaced by attacks of tachycardia. Several infected teeth were removed and a few months later she began to suffer from periodic pain in the right side of the face, for which no cause could be found. Cannabis gave no relief, but she improved on phenobarbital. The other patient, a woman, aged 45, gave a history of migraine in both parents, brothers and sisters and many other relatives on both sides. She had always been delicate, exhaustible and given to mental depression. Her headaches had become very frequent but were severe only about twice a month. About twice a year she had attacks of tachycardia with pulse up to 240.

Paroxysmal tachycardia is recognized as a "migranic equivalent" by Critchley and Ferguson.[2] This relationship was suggested in 1925 by Thomas and Post,[13] who had found that the heredity factor was that of migraine rather than of tachycardia, that attacks of the two conditions were brought on by the same factors, and that visual and vasomotor prodromes were often present also in the case of tachycardia. Most patients had a previous migraine history, the headaches later being replaced by tachycardia. In earlier discussions of cardiac neuroses expressions of similar views are found. Thus, Hoffman [14] speaks of the frequent association of paroxysmal tachycardia with migraine and epilepsy. Curschmann [15] emphasizes the presence of typical ophthalmic migraine in five of his patients with angina pectoris vasomotoria (Nothnagel type). Vallery-Radot [16] has observed alternating attacks of migraine and tachycardia in a woman, and both kinds could be aborted by amyl nitrite.

RELATION TO ENDOCRINES AND VEGETATIVE NERVOUS SYSTEM

Endocrines and the vegetative nervous system are considered together to avoid embarrassing dilemmas. In these fields, sweeping claims have been made to the extent that all migraine relates to this or that endocrine or is due to a disorder of the vasomotor nerves. Riley [1] has reviewed these complex problems so thoroughly and so fairly that I shall discuss them only briefly. The hypophysis has been made the basis of both physical and chemical theories. Timme [17] assumes that certain underlying endocrine disturbances give rise to compensatory enlargement of the hypophysis, which in turn leads to headache by distention of the sella, to visual disturbances on account of the proximity to the optic chiasm and nerves and to the ocular nerves within the cavernous sinus. In support of this theory is cited the occasional occurrence of migraine-like attacks in acromegaly and other forms of pituitary tumor, while opponents claim—and rightly—that migrainous symptoms are not frequent enough in known pituitary disease to support this theory. The anatomic evidence appears meager to most of us. The scintillating scotomas and transient hemianopias fit better with what we know of circulatory disturbances in the occipital lobes. The hypophysis being in the median line, this theory does not explain why the pain so often is unilateral. The roentgenologic evidence as to enlarged and also "bridged-in" sellas is not convincing. However, in a recent discussion Timme [18] reiterates his statement that the sella turcica in migraine shows the results of pressure and that the factor of inheritance is in the size and type of the sella. In proof of his theory he cites with satisfaction a case reported by Pitfield:[19] A young man, subject to excruciating bitemporal headaches, suddenly experienced instant relief while in an unusually severe attack which had driven him to a hospital. A roentgenogram showed a fracture of the posterior clinoid processes, which had released the gland and thus relieved the pain. The trouble with this case is that from the brief description it looks more like a case of pituitary tumor than of migraine.[19a] Recently Thomson,[20] who reports sella changes in seventeen of twenty-five cases of "menstrual migraine," has reported therapeutic successes with injection of theelin three times a day for a week before the expected period. Similar good results with the placental hormone emmenin (Collip) are reported by Blakie and Hossack.[21]

Riley, Brickner and Kurznok [22] recently reported on investigations still in progress in New York to determine the amounts of prolan (pituitary gonad-stimulating hormone) and theelin (produced by the ovary) in the urine of migraine patients, eleven females and two

10. Goldflam, S.: Deutsche Ztschr. f. Nervenh. **76:** 158, 1923.
11. Adie, W. J.: Lancet **2:** 237 (Aug. 2) 1930.
12. Ehrenberg, Lennart: Spontan Subarachnoidalblödning, Uppsala, Almquist & Wiksells, 1924.
13. Thomas, W. A., and Post, W. E.: Paroxysmal Tachycardia and Migraine, J. A. M. A. **84:** 569 (Feb. 21) 1925.
14. Hoffman, August: Deutsche Ztschr. f. Nervenh. **38:** 200, 1910.
15. Curschmann, Hans: Deutsche Ztschr. f. Nervenh. **38:** 211, 1910.
16. Vallery-Radot, Pasteur: Rev. neurol. **1:** 895 (June) 1925.
17. Timme, Walter: Brit. M. J. **2:** 197 (July 31) 1926; Lectures on Endocrinology, ed. 2, New York, Paul B. Hoeber, Inc., 1932, p. 124.
18. Timme, Walter: J. Nerv. & Ment. Dis. **77:** 520 (May) 1933.
19. Pitfield, R. L.: Spontaneous Fracture of the Posterior Clinoids, J. A. M. A. **90:** 457 (Feb. 11) 1928.

19a. In a personal communication, Dr. Pitfield informed me that he lost contact with this patient at the time of the first report.

20. Thomson, A. P.: Lancet **2:** 229 (July 30) 1932.
21. Blakie, N. H., and Hossack, J. C.: Canad. M. A. J. **27:** 45 (July) 1932.
22. Riley, H. A.; Brickner, R. M., and Kurznok, Raphael, J. Nerv. & Ment. Dis. **77:** 516 (May) 1933 (more complete in Bull. Neur. Instit. New York, 1933).

males, and their relation to the attacks. The amount of theelin excreted was generally below the normal level but without relation to the attacks. On the other hand, prolan generally appeared in the urine a few days before the onset and disappeared at or soon after the onset. It also appeared regularly in one of the males, irregularly in the other. (According to Zondek, prolan does not normally occur in the urine of males.) In two patients with prolonged headache, "status hemicranicus," the excretion of prolan was practically continuous. Migraine attacks of usual type were induced in seven of nine female patients in from four to twelve hours after the injection of 2 cc. of "follutein" (a pituitary preparation containing the sex hormone prolan, injection of which otherwise rarely produces headache). The authors point out that theelin is normally found in the urine throughout the menstrual life of a woman, while prolan is taken up by the ovaries. It appears in the urine after cessation of ovarian function, as after spontaneous or artificial menopause and during pregnancy. The presence of prolan preceding an attack of migraine therefore would indicate either pituitary hyperfunction or ovarian hypofunction, in either case offering an actual demonstration of an endocrine disorder connected with migraine. Incidentally, the sella turcica was normal in all these cases.

It is a fact that migraine attacks usually are less frequent during pregnancy. Since prolan is found in the urine during pregnancy and since follutein, which contains prolan, produces attacks of headaches in migrainous subjects, one is confronted with an apparent contradiction. However, it has recently been suggested that the anterior pituitary lobe contains no gonad-stimulating hormone during pregnancy and that the "prolan" found during pregnancy is produced by the chorionic epithelium. The success of the British authors with theelin and emmenin is explainable by the known fact that the presence of these hormones in the blood inhibits the formation of pituitary prolan.

A largely thyroid etiology suggested in 1899 by Hertoghe [23] has been advocated by Lévi [24] of Paris in numerous articles appearing from 1905 to 1925. He admits that his data appear paradoxical, for while he never found migraine combined with myxedema but often with clinical hyperthyroidism, yet thyroid medication is, according to him, the best treatment. He believes that victims of migraine, asthma, urticaria and "neuroarthritis" are essentially hypothyroid but with episodes of reactive hyperthyroidism. Later, however, Lévi [25] is found sponsoring a "hepatohypophyseal" migraine as well. In this country the thyroid factor has been stressed by Moehlig,[3] who himself, however, pointed out that his material comes from a goiter belt (Detroit). Both high and low basal metabolic rates were observed, and the best therapeutic results were from thyroidectomy and thyroid feeding in the respective conditions. On the other hand, in an address on migraine, the Danish neurologist Christiansen [26] said that he had never seen any benefit from thyroid therapy in migraine even in the presence of thyroid disease, nor, furthermore, from any kind of organotherapy in migraine.

Whatever background endocrine disorders may offer, it is reasonable to suppose that the sympathetic nervous system is directly concerned in the production of the main symptoms of migraine. This is rendered more plausible by the recent demonstration of nerve fibers in cerebral vessels by Penfield, Hassin and others. Either vascular spasm with ischemia or vasodilatation with hyperemia will explain unilateral headache, scotomas, vertigo, transient numbness, aphasia, paralysis and convulsions.

23. Hertoghe: Nouv. iconog. de la Salpêtrière, 1899.
24. Lévi, Léopold: Rev. neurol. **1**: 936 (June) 1925.
25. Lévi, Léopold: Bull. et mém. Soc. méd. d. hôp. de Paris no. 17, p. 474, 1928.
26. Christiansen, Viggo: Rev. neurol. **1**: 854 (June) 1925.

ALLERGY AND MIGRAINE

The claims of allergists are gradually rising. In 1927, Vaughan [27] found definite evidence of allergy in twelve of thirty-three cases (36.4 per cent). In 1930, Balyeat and Brittain [28] found a family history of allergy in 85.4 per cent of fifty-five cases. Over half of their patients had "from 85 to 100 per cent freedom from symptoms," and only five patients had less than 40 per cent relief after treatment. Rowe [29] wrote in 1928 that food allergy must be considered as a possible cause in all cases of migraine. During the preceding two years he had observed thirty cases which yielded to treatment based on food allergy. The latter was determined by the history of food disagreements, skin tests and "elimination diets." One reason why physicians hesitate to accept food allergy as the main cause of migraine, according to him, is "the fact that skin reactions to foods are often absent or difficult to interpret, the sensitization being localized in the cerebral tissues rather than in the skin." Critchley and Ferguson [30] think that the case for the allergic nature of migraine has been overstated, and Riley [31] says that "conservative opinion must hold that its substantial proofs are yet too few and inconclusive to warrant more than encouragement in the energetic pursuit of a greater volume of well established facts."

THE SPINAL FLUID IN MIGRAINE

Considerable theoretical and practical interest attaches to the pressure condition of the fluid. Kennedy [32] suggests that edema of the cerebral meninges produces the localized headache and the local cerebral symptoms of migraine and that such edema may be caused by intoxication by foreign protein or from the gastro-intestinal tract. Critchley and Ferguson [30] state: "We know that the cerebrospinal fluid pressure is reduced, the composition of the fluid being normal," but do not give the source of this knowledge. The only pressure readings cited by Riley are those of Kerppola,[33] who performed punctures in five cases during attacks, with readings of 80, 110, 120, 190 and 220 mm., respectively. Quincke in three cases obtained pressure readings during attacks ranging from 155 to 210 mm. and noted relief after the punctures. Like these observers, Sicard [34] found the fluid normal except for frequent increase in pressure. Claude [35] also has observed increased pressure in "simple" migraine. Mingazzini [36] mentions increased secretion of cerebrospinal fluid and recovery following lumbar puncture. In a later report he [37] relates the

27. Vaughan, W. T.: Allergic Migraine, J. A. M. A. **88**: 1383 (April 30) 1927.
28. Balyeat, R. M., and Brittain, Fannie Lou: Am. J. M. Sc. **180**: 212 (Aug.) 1930.
29. Rowe, A. H.: Food Allergy, J. A. M. A. **91**: 1623 (Nov. 24) 1928.
30. Critchley, Macdonald, and Ferguson, F. R.: Lancet **1**: 125 (Jan. 21) 1933.
31. Riley, H. A.: Bull. Neurol. Inst. New York **2**: 475 (Nov.) 1932.
32. Kennedy, Foster: Internat. Clin. **3**: 200 (Sept.) 1931.
33. Kerppola, W.: Monatschr. f. Psychiat. u. Neurol. **51**: 83, 1926.
34. Sicard, J. A.: Bull. et mém. Soc. méd. d. hôp. de Paris **29**: 1142 (June 6) 1913.
35. Claude, H.: Rev. neurol. **1**: 837, 1914.
36. Mingazzini, G.: Policlinico **21**: 3 (Jan. 4) 1914.
37. Mingazzini, G.: Policlinico **24**: 269 (July) 1917.

results of therapeutic puncture in forty-seven cases of what he calls "essential headache," mostly in women and beginning at puberty, intermittent at first and later becoming more and more constant but with exacerbations attended by vomiting and eye symptoms, so it would be classed as migraine. The pressure was always increased. There was temporary aggravation after the puncture, followed later by cure or great improvement in all cases except eight, which remained unchanged.

"ABDOMINAL MIGRAINE"

Like convulsions, so paroxysms of abdominal pain may be substituted for those of headache. After becoming familiar with such "abdominal migraine" while visiting clinics in Berlin, Brams [38] rendered useful service by calling attention to this condition, for which many futile laparotomies have been performed. To the twenty-two cases in his first paper, ten were added in a subsequent one by Blitzsten and Brams.[39] Corroboration was given in papers by Woltman [40] and Buchanan.[41] In my series are two cases of this kind, both in women with a strong family history of migraine and urticaria. Both patients began having sick headaches in late childhood and also attacks of abdominal pain, which led to futile search for gallstones in the one at 20, and in the other at 32. The former patient had five additional laparotomies, yet continued to have headaches and occasionally urticaria. The second patient also had attacks of iritis and pseudo-angina pectoris and continued with the headaches, from which she finally got great relief after a course of intravenous injections of sodium thiosulphate.

PSYCHIC EQUIVALENTS

One of the similarities of epilepsy and migraine is that the usual attack may be replaced by some happening in the mental sphere, in both cases most frequently in the form of a "twilight state." These manifestations are thoroughly discussed by Moersch,[42] who found mental symptoms in 150 of 1,000 cases seen at the Mayo Clinic. In twenty-two cases they were pronounced. Moersch divides them into four groups: (1) those occurring during the prodromal period, (2) those occurring during the attack of headache, (3) those occurring as equivalents replacing the headache, and (4) those occurring as associated phenomena.

A girl, aged 14 years, subject to headaches at her periods, was seen by me in 1928 on account of various psychic episodes, in which she was partly dazed, sometimes exhibiting temper tantrums; once she got lost on the street near home, and once she stepped into a neighbor's garden and picked flowers. In 1931, she was reported as having a severe manic outbreak for twelve days, and there have been no severe attacks since that time.

OPHTHALMOPLEGIC MIGRAINE

While "ophthalmic" or "ocular" migraine with its scotomas and other sensory eye phenomena is one of the commonest types, I hesitate to include cases in which paralysis of ocular muscles occurs. It is nearly always the muscles supplied by the oculomotor nerve that are involved; the disorder was first described as "recurrent oculomotor paralysis." When, as often happens, the paralysis begins to complicate ordinary migraine attacks of many years' standing, but without any paralysis existing in the intervals, one naturally looks for a common cause for the sensory and motor symptoms. If the vasomotor theory of migraine is accepted, one may approve of the explanation offered by Ehlers [43] for the occurrence of transient oculomotor paralysis at the end of headaches attended by scintillating scotoma and hemianopia. The last two symptoms may be caused by spasm of the posterior cerebral artery and resulting ischemia of the calcarine cortex. Subsequent vasomotor paralysis and dilatation of the artery may lead to pressure on the oculomotor nerve, which lies close to this artery in the interpeduncular fossa. However, Ehlers himself gives warning against accepting such an explanation for all cases and to be particularly suspicious of permanent organic changes when the abducens nerve is involved or when the oculomotor paralysis is of nuclear type. A huge literature concerning this disorder has sprung up, and there have been several cases in which small tumors or other gross lesions have been found. Hence, I hesitate to include this whole group in ordinary migraine but would accept cases in which, after years of observation, the symptoms remain explainable by the hypothesis of Ehlers. A similar suggestion as to the importance of the proximity of the third cranial nerve to vessels in the production of this syndrome was made earlier by Shinoya,[44] who reported a case with necropsy in which a gross lesion was found.

THE THERAPEUTIC PROBLEM

Among chronic ailments, migraine ranks high as a cause of loss of time and of broken engagements for work or pleasure. On the other hand, it does not figure as a cause of death. Unless one is unreasonably exacting in the diagnostic criteria, it is about the commonest "disease" of civilized peoples. There are few reliable data concerning its actual frequency. Among 15,000 patients seen in private practice, Grimes [45] found 1,200 cases of migraine. There are all gradations, from severe and disabling to most trifling forms, and it is not possible to be logical without including the latter, which enormously swells the number of cases. It is safe to say that much less than half of all migraine victims ever consult a physician for it. Crile's conception of exophthalmic goiter and gastric ulcer as diseases of civilization may well be applied to migraine. The attacks may be considered nature's protest against the speed with which in the last few hundred generations readjustments have had to be made to give right of way to the forebrain. Some of the lower mechanisms fail to keep up, and a halt must be called at times. Viewed in this way, migraine is protective and a warning to the individual that there is something wrong with his hygiene. He may not be fitted for his work or the climate in which he finds himself, or his habits may need regulation. As a matter of fact, many victims of migraine are greatly helped by a change in occupation or certain habits, especially as regards food, exercise and sleep.

Petersen,[46] who has made an extensive study of the relation of disease to atmospheric conditions, says:

The migraine patient is usually leptosome and poorly buffered. The acute precipitation of the attacks usually occurs

38. Brams, W. A.: Abdominal Migraine, J. A. M. A. **78**: 26 (Jan. 7) 1922.
39. Blitzsten, N. L., and Brams, W. L.: Migraine with Abdominal Equivalent, J. A. M. A. **86**: 675 (March 6) 1926.
40. Woltman, H. W.: Minnesota Med. **7**: 193 (March) 1924.
41. Buchanan, J. A.: Boston M. & S. J. **192**: 667 (April 2) 1925.
42. Moersch, F. P.: Am. J. Psychiat. **3**: 697 (April) 1924.
43. Ehlers, H.: Acta psychiat. et neurol. **3**: 219, 1928.
44. Shinoya, F.: Deutsche Ztschr. f. Nervenh. **42**: 155, 1911.
45. Grimes, Eli: M. J. & Rec. **134**: 417 (Nov. 4) 1931.
46. Petersen, W. F.: Proc. Inst. Med. Chicago **9**: 234 (Jan. 15) 1933.

with a relative alkalosis, due to a sudden fall in the CO_2 content of the serum. The most frequent direct cause of this alteration is a sudden change in the barometric pressure from high to low. Later a distinct anoxemia follows and the development of a relative acidosis, which in turn may reach a maximum with the sudden upturn of the barometric pressure from low to high. The difficulty in therapy lies in the fact that any one or all of these factors may be involved in the mechanism of the headache. Improvement usually follows stabilization of the patient, i. e., by a change in the cell membrane status, in the buffer system, or a change in the environmental factor that may be at fault. Many other factors, such as fatigue, diet, infection and intoxication, and sensitization, are frequently inciting agents but the governing mechanism that must always be considered is the gaseous exchange as it affects individuals of different constitutional lability.

METHODS OF TREATMENT

1. *Hygienic.*—Most migraine patients would be reasonably comfortable if they could and would correct obviously erroneous modes of living and undesirable environmental factors. I have seen almost complete relief by stopping overeating or excessive water drinking, by drinking a glass of cream between meals in the case of persons working long hours, by the institution of regular and abundant outdoor exercise, the regulation of the diet along various lines and the overcoming of constipation.

2. *Correction of Demonstrable Anomalies or Disease Conditions.*—The constitutional lability of migraine victims enhances the importance of factors that would not disturb normal persons. Importance therefore attaches to small errors of refraction, to even minor evidences of allergy or of endocrine disorders. In the so-called bilious and abdominal types, the gastro-intestinal tract should receive scrupulous attention.

3. *Medicinal Treatment for Migraine Per Se.*—There are many drugs which, given regularly for months or years, have done well in a small proportion of cases and failed in a larger proportion. Bromides, phenobarbital, calcium salts and cannabis deserve particular mention. I have given fluidextract of cannabis in the largest dosage tolerated—and this is extremely variable—to dozens of patients with a few successes but can report many more utter failures. In the last two years I have been surprised by comparatively good results from intravenous injections of 1 Gm. doses of sodium thiosulphate (hyposulphite). I was told of this by Dr. R. E. Johannesen of our medical department. Dr. Loren Avery in our neurologic clinic noted the cessation of headache in some patients who had been given the thiosulphate on account of arsphenamine intoxication. I am not sufficiently familiar with the pharmacology of hyposulphites to offer an explanation for this favorable action. A report by Kabelik [47] is perhaps suggestive. This investigator injected sodium thiosulphate into horses and found the serum from these horses was less likely to cause anaphylactic reactions in guinea-pigs. He found that phagocytosis was increased 100 per cent and believes that this drug increases the production of the (hypothetic) reticuloendothelial hormone "reticulin." [47a]

For the relief of the attacks, nearly every patient has his pet remedy. I have seen several cases of chronic acetanilid poisoning and a few of morphine addiction from the injudicious use of drugs.

47. Kabelik, J.: Compt. rend. Soc. de biol. **110:** 397 (June 10) 1932.
47a. Just after this was written, an interesting report was made by L. A. Crandall and G. M. Roberts (Illinois M. J. **63:** 512 [June] 1933) on the treatment of periodic headache with chondroitinsulphuric acid by mouth.

SURGICAL TREATMENT

Three operative methods have been suggested as a last resort in severe cases.

1. *Subtemporal Decompression.*—Harvey Cushing [48] wrote in 1910:

> One by-product of the decompression idea which has aroused our interest has grown out of the striking relief from the intracranial discomforts experienced by patients with tumor, through the establishment of a subtemporal defect in bone and dura. This matter concerns those unfortunates who are constant sufferers from intractable migraine. There are many types, of course, of hemicrania and many causes for it but in one familiar group there occurs during the attack a marked arterial dilation of the temporal vessels accompanied by a venous congestion which is seen best in the external branches of the ophthalmic vein, but which is observable too by the ophthalmoscope in the eyegrounds. Ptosis, pupillary inequality, vomiting, slow pulse and other familiar symptoms, associated at times with a low grade of choked disk, accompany the attacks, and a number of these individuals have submitted with eager willingness to the experiment of a subtemporal decompression, which has resulted in a considerable measure of relief in most instances. What encourages us to believe that the step is in the right direction is the fact that when subsequent headaches occur there is evidence of increased tension shown by a tendency to protrusion at the seat of the defect, which becomes flat again, or even recedes, with the free interval. The seizure would seem to be brought about by some local nerve discharge acting on the blood vessels and causing pressure from a circumscribed edema, possibly of the nature of an angioneurotic edema. Nevertheless it must be admitted that the matter demands much longer study before it can be advocated on a sound basis of therapy.

Critchley and Ferguson [49] have recently written: "For the very severe cases which do not respond to any of the above measures we would recommend a right subtemporal decompression. Gordon Holmes says that he has never known migraine to persist in a patient who has had a surgical or traumatic decompression."

2. *Operations on the Sympathetic.*—It is needless to say that Jonnesco and Leriche have removed cervical ganglions for migraine and reported success. Hellwig [50] suggested periarterial sympathectomy on the common and internal carotid arteries. In this country, Dandy [51] reported relief in two men with unilateral headache by removal of the inferior cervical and first thoracic ganglions.

3. *Ligation of the Middle Meningeal Artery.*—Dickerson [52] has ligated the middle meningeal artery in severe cases of unilateral migraine. In two patients the ligation was done because of head injury; it was afterward found that the patients had been sufferers from migraine. It did not recur after operation. In one case the procedure was part of an exploratory operation, and in the other four it was deliberately planned for the relief of migraine. Dr. Dickerson [53] has since informed me that these patients have remained free from headache with two exceptions. In one patient, in whom probably only the posterior branch of the artery was ligated, there have been a few light attacks, and one, who proved to be a narcotic addict, again complained some of pain after seven months, which very well may have been due to craving for

48. Cushing, Harvey: Cleveland M. J. **9:** 827 (Nov.) 1910.
49. Critchley, Macdonald, and Ferguson, F. R.: Lancet **1:** 187 (Jan. 28) 1933.
50. Hellwig, Alexander: Arch. f. klin. Chir. **128:** 261, 1924.
51. Dandy, W. E.: Bull. Johns Hopkins Hosp. **48:** 357 (June) 1931.
52. Dickerson, D. G.: J. Nerv. & Ment. Dis. **77:** 42 (Jan.) 1933.
53. Dickerson, D. G.: Personal communication to the author, April 28, 1933.

drugs. Craig [54] reports a case of relief from a steady unilateral frontotemporal headache by ligation of this artery, the anterior branch of which was found embedded in the inner table of the skull.

8 South Michigan Avenue.

Committee on Foods

THE COMMITTEE HAS AUTHORIZED PUBLICATION OF THE FOLLOWING AMENDMENT OF ITS RULES AND REGULATIONS.

RAYMOND HERTWIG, Secretary.

RULE GOVERNING ADVERTISING TO PHYSICIANS

The section "Rules Governing Package Label and Advertising," page 10 of the Rules and Regulations (February, 1933), has been amended by addition of the following paragraph:

Advertising intended solely for the physician may include disease names and information supported by sufficient evidence regarding the special use of foods in the diet of the sick. Such advertising, however, shall not treat foods as medicines or attempt to transform foods into therapeutic agents. Food advertising shall consider foods solely for providing nourishment for the well and for the sick or for preventing or correcting nutritional disorders. Products treated as therapeutic agents come within the purview of the Council on Pharmacy and Chemistry.

REPORTS OF THE COMMITTEE

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary.

PURITY BRAND FREE RUNNING TABLE SALT
(ADDED CALCIUM CARBONATE)

Manufacturer.—International Salt Company, New York.

Description.—Table Salt containing 1 per cent added calcium carbonate, which tends to preserve its "free running quality." The same as International Free Running Salt (THE JOURNAL, July 2, 1932, p. 34).

LARSEN'S CARROTS (STRAINED-UNSEASONED)

Manufacturer.—The Larsen Company, Green Bay, Wis.

Description.—Sieved carrots prepared by efficient methods for retention in high degree of the natural mineral and vitamin values of the raw carrots. No added sugar or salt.

Manufacture.—Freshly harvested carrots are sorted, washed, peeled, inspected to remove any undesirable material, steamed until soft, puréed as described for tomatoes (THE JOURNAL, July 1, 1933, p. 35), admixed with a small quantity of water to produce the desired consistency, heated to 82 C. in a closed vessel and automatically filled into washed cans, which are sealed and processed for sixty minutes at 116 C.

Analysis (submitted by manufacturer).—

	per cent
Moisture	92.6
Total solids	7.4
Ash	0.4
Salt (NaCl)	0.08
Fat (ether extract)	0.2
Protein (N × 6.25)	0.6
Crude fiber	0.6
Carbohydrates other than crude fiber (by difference)	5.6

Calories.—0.3 per gram; 9 per ounce.

Vitamins and Claims of Manufacturer.—See Larsen's Strained Tomatoes Unseasoned—Ready for Use (THE JOURNAL, July 1, 1933, p. 35).

54. Craig, W. M.: Localized Headache Associated with Lesion of Meningeal Vessels, J. A. M. A. **100**: 816 (March 18) 1933.

MARY LOU FLOUR (BLEACHED)

Manufacturer.—The Robinson Milling Company, Salina, Kan.

Description.—A hard winter wheat "straight" flour; bleached.

Manufacture.—Selected hard winter wheat is cleaned, scoured, tempered and milled by essentially the same procedures as described in THE JOURNAL, June 18, 1932, page 2210. Chosen flour streams are blended and bleached with nitrogen trichloride (one-seventh ounce per 196 pounds) and with a mixture of benzoyl peroxide and calcium phosphate (one-half ounce per 196 pounds).

Claims of Manufacturer.—For bread baking.

GERBER'S STRAINED TOMATOES

Manufacturer.—Gerber Products Company, Fremont, Mich.

Description.—Sieved, cooked tomatoes retaining in high degree the natural vitamin and mineral values of the tomatoes; the skins and seeds are removed by straining. No added seasoning or other ingredients.

Manufacture.—Especially prepared canned tomatoes are strained, canned and processed as described for Strained Vegetable Soup (THE JOURNAL, July 22, 1933, p. 282).

Analysis (submitted by manufacturer).—

	per cent
Moisture	85.8
Total solids	14.2
Ash	1.0
Fat (ether extract)	0.2
Protein (N × 6.25)	2.5
Reducing sugars before inversion (as invert)	7.5
Sucrose (copper reduction method)	0.6
Starch (acid hydrolysis method)	0.3
Crude fiber	0.6
Carbohydrates other than crude fiber (by difference)	9.9

Calories.—0.5 per gram; 14 per ounce.

Vitamins, Minerals and Claims of Manufacturer.—See Strained Vegetable Soup (THE JOURNAL, July 22, 1933, p. 282).

CLAPP'S ORIGINAL PUREE OF CARROTS
(ADDED SALT)

Manufacturer.—Harold H. Clapp, Inc., Rochester, N. Y.

Description.—Strained, cooked carrots; a small amount of salt is added. The method of preparation is efficient for retention in high degree of the natural vitamins and minerals.

Manufacture.—Purchased canned carrots are strained in an atmosphere of water vapor and subsequently treated as described for Clapp's Original Baby Soup (THE JOURNAL, June 24, 1933, p. 2011).

The purchased canned carrots are prepared from selected varieties; they are blanched in hot water, machine peeled, inspected to remove unsuitable material, diced and packed into cans, which are filled with salt solution. The cans pass through an exhauster to remove absorbed air, sealed, processed under pressure and immediately cooled.

Analysis (submitted by manufacturer).—

	per cent
Moisture	94.6
Total solids	5.4
Ash	0.7
Salt (NaCl)	0.3
Fat (ether extract)	0.1
Protein (N × 6.25)	0.4
Crude fiber	0.4
Carbohydrates other than crude fiber (by difference)	3.8

Calories.—0.2 per gram; 6 per ounce.

Vitamins and Claims of Manufacturer.—See Clapp's Original Baby Soup (THE JOURNAL, June 24, 1933, p. 2011).

ROBIN'S BEST FLOUR (SELF-RISING) (BLEACHED)
BETTY JANE SELF-RISING FLOUR (BLEACHED)

Manufacturer.—The Robinson Milling Company, Salina, Kan.

Description.—Self-rising flours prepared from a hard wheat "standard patent" flour, calcium acid phosphate, salt and baking soda; bleached.

Manufacture.—The ingredients are mixed in a batch mixer and automatically packed in bags.

Claims of Manufacturer.—For cake, biscuit and pastry baking in the home.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, AUGUST 19, 1933

DIET IN RELATION TO GOITER

When the constant presence of iodine in the normal thyroid gland was described by Baumann thirty-seven years ago, a new chapter was opened in the study of physiologic function. The interest in the discovery was greatly enhanced by the subsequent appreciation of a close relationship between the distribution of endemic goiter and the availability of iodine in the food and water supplies of definite areas. The results belong, of course, among the classic contributions to the medical sciences. It must not be assumed, however, that this chapter of knowledge has become a closed book. The indispensability of iodine for normal bodily function is, indeed, beyond debate. Strange as it may seem, however, the quantitative extent of man's requirement of the element is not as yet well determined.

According to recent figures,[1] the iodine content of human thyroid ranges in adults from 2.4 to 23.7 mg., with an average of 8 mg. Defective glands are much poorer in iodine. What intake of the element is requisite to maintain a physiologically satisfactory content in the glands? This is, of course, a fundamentally important question. The quantities are so small, and the variability of the natural sources of iodine in the dietary regimen is so wide, that the question of requirement cannot readily be answered. According to the elucidating investigations of the South Carolina Food Research Commission,[2] views as to human iodine requirements have up to this time been based almost entirely on analysis of diets in goitrous and nongoitrous regions, or on the iodine elimination of individuals in such regions. Summarizing such available information, Cameron states that the minimum quantity of iodine required has been estimated to amount only to between 35 and 70 gammas daily, while Orr and Leitch state that the minimum daily requirement may be about 45 gammas for an adult male and 150 gammas for a child. A gamma is 0.000001 Gm., a grain being 0.064 Gm., or 64,000 gammas. An elaborate study of the iodine requirement of the most extensively investigated laboratory species, the albino rat, has led the South Carolina investigators[2] to suggest that from 20 to 40 gammas per thousand calories of the ration be considered as the minimum iodine need. The figures were secured by feeding diets to which different amounts of iodine (as KI) were added. Using as a criterion the smallest amount of iodine necessary to prevent any significant thyroid enlargement, they found that the minimum iodine requirement was approximately from 1 to 2 gammas per rat daily. This intake of iodine yielded a concentration of from 0.11 to 0.18 per cent of iodine (dry basis) in the thyroid. On a basis of comparison with the regular calory intake of the species, the minimum iodine requirement of the human being was calculated to be approximately from 60 to 120 gammas daily.

Goiter is directly related to the problem of iodine intake. According to Marine it is a compensatory or work hypertrophy of the thyroid depending on a relative or absolute deficiency of iodine. This deficiency of iodine may be due to: (1) factors that bring about an abnormally low intake of iodine; (2) factors that interfere with the absorption or utilization of an otherwise adequate intake; (3) factors that increase the needs of the body for the iodine-containing hormone. Perhaps the iodine supply is the most important feature of the goitrogenic diet.

1. White House Conference on Child Health and Protection: Part III. Nutrition, New York, Century Company, 1932.

2. Levine, H.: Remington, R., and von Kolnitz, H.: Studies on the Relation of the Diet to Goiter: I, J. Nutrition **6**: 325 (July) 1933; II, ibid., p. 347.

THE PHYSICIAN AND THE NATIONAL RECOVERY ADMINISTRATION

The legislation enacted to raise the country out of the present depression has given rise to many difficult questions, and the pressure under which that legislation is being made effective renders it difficult at times to obtain authoritative answers. Interpretations and proposals put forth from private sources, too, only add to the confusion. The result is that many physicians are in a state of doubt and hesitation. THE JOURNAL is in receipt of many inquiries from physicians and hospitals with requests for advice.

It has been definitely settled that physicians, in the discharge of their professional duties, are not within the terms of the National Industrial Recovery Act. A physician may work as many hours as he finds expedient and for as small compensation as he is willing to accept, and he will violate no law and no federal policy.

THE JOURNAL last week said: "However, if a physician employs more than two persons as attendants in his office, of the class of clerical employees, accountants, laborers and similar types of help, they do come under the National Recovery Act with a minimum wage and certain maximum hours of work." Because

of many rulings reported from various parts of the country that were inconsistent with this statement, a ruling was requested from General Thomas S. Hammond, executive director of the President's reemployment program. The policy stated in THE JOURNAL, said General Hammond, concerning physicians as employers of certain types of help, is sound and has his approval. Rulings from other sources may be disregarded.

Many physicians have manifested concern because a proposed code of fair practice for the retail drug trade, prepared and published by the National Association of Retail Druggists, contained provisions from which it might be inferred that physicians would be required to purchase medicinal preparations, drugs, pharmaceuticals and chemicals, applicable to the outside or inside of the human body, from retail druggists and to pay retail prices, and that physicians would not be permitted to distribute drugs and medicines to their patients and to receive pay for them. The draft of the proposed code seemed to be designed, too, to prevent hospitals from maintaining drug rooms for the compounding and dispensing of drugs necessary in the operation of the hospital, unless such drug rooms were under the supervision of registered pharmacists or licensed physicians at all times when in operation. In a later draft of this proposed retail drug trade code, these objectionable provisions have been eliminated.

While the draft of a proposed code published by the National Association of Drug Clerks contains the same objectionable provision looking toward the closing of the drug rooms in all hospitals and dispensaries throughout the country, when such drug rooms are not, when in operation, under the constant supervision of registered pharmacists or licensed physicians, it seems hardly likely that this proposal will carry much weight in view of the fact that the National Association of Retail Druggists has eliminated an analogous provision from its draft of a proposed code. The code proposed by the National Association of Drug Clerks, however, is worthy of commendation because there is incorporated in it a specific provision that "in view of the fact that the professional training of a pharmacist does not qualify him to intelligently diagnose and treat diseases, proprietors or employees shall decline to give medical advice and refer the general public seeking such advice to a regular practicing physician." This code properly proposes, too, that "proprietors and employees shall at all times uphold the professional reputation of physicians, in return expecting the same consideration from the medical profession."

In considering the present activities of the government under the National Industrial Recovery Act, it must be borne in mind that they will admittedly lead to increased prices, even if that is not their avowed purpose. In trades and industries, it may be economically sound to increase prices. It can hardly be regarded as economically sound, however, to increase the cost of medical and hospital services to those who are sick and injured and to women during confinement, and thus to add to their burdens. Undoubtedly this aspect of the matter will be taken into consideration by the National Recovery Administration in its endeavors to apply the act to the medical profession and to related activities. The American Medical Association, however, will keep in touch with the situation, to see that the public health is not jeopardized by any decision affecting adversely the interests of those in need of medical services.

ROCKY MOUNTAIN SPOTTED FEVER

Rocky Mountain spotted fever can no longer be regarded a disease restricted to the Rocky Mountain region. "Spotted fever" is now reported beyond the boundaries in which the common vector of the disease, the wood tick, is found. Recent studies [1] show that the disease is prevalent in the eastern and southeastern parts of the United States where typhus, with which Rocky Mountain spotted fever is sometimes confused, is endemic. Rumreich, Dyer and Badger have also established the fact that the dog tick (Dermacentor variabilis) is the vector of the disease in these areas. This tick is found in eastern and midwestern states and on the west coast and to some extent overlaps the distribution of Dermacentor andersoni. In these areas, sporadic cases of typhus already have been reported.

Because of the increasing distribution and incidence of the disease, the problem of recognition and treatment has become of interest to every physician. Through the brilliant investigations of Spencer and Parker,[2] a vaccine has been produced which offers complete protection to man against an attack of the disease of the mild type and partial protection against the more virulent forms. The value of this vaccine has not only been proved experimentally but also adequately demonstrated in well controlled studies in man in the highly infested Bitter Root Valley of Montana and the Snake River Valley of Idaho. This vaccine consists of a phenolized emulsion of the viscera of infected wood ticks. It is now produced on a large scale under the direction of Dr. Parker at Hamilton, Montana.

Although the value of the vaccine has been demonstrated, its use is somewhat limited. It is practical to vaccinate only those who, because of their occupation, are constantly exposed to the tick bite and those who live in highly infested areas where the virus is known to possess a high degree of virulence. Because of the wide distribution of the disease in nature and its low incidence in man, it is not practical to immunize all persons who occasionally come in contact with the wood tick or the dog tick.

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1. Rumreich, A. S.; Dyer, R. E., and Badger, L. C.: The Typhus-Rocky Mountain Spotted Fever Group: An Epidemiological and Clinical Study of Eastern and Southeastern States, Pub. Health Rep. **46**: 470 (Feb. 27) 1933.
2. Spencer, R. R., and Parker, R. R.: Studies on Rocky Mountain Spotted Fever, Bull. 154, Hyg. Lab., U. S. P. H. S., 1930.

A much neglected phase of this problem has been revived by the work of Zinsser and Ruiz Castaneda [3] on Mexican typhus, a disease that seems quite closely related to Rocky Mountain spotted fever. These workers produced a highly protective serum for the guinea-pig by immunizing a horse to a phenolized suspension of Rickettsia obtained from infected rats previously irradiated with x-rays. Several important similar studies have been made in an attempt to produce an immune serum for Rocky Mountain spotted fever. As early as 1908, Ricketts and Gomez [4] showed that, following an attack of spotted fever in the guinea-pig and monkey, protective antibodies may be demonstrated by injecting mixtures of virus and immune serum into another animal. They showed that passive immunity may be established in the healthy guinea-pig by injection of blood or serum of an immune guinea-pig. However, they found that the curative properties of the immune serum were low and that prohibitive quantities would be necessary to protect man. They suggested that immune serum of the horse which was found susceptible to inoculation may be developed for the prevention of the disease in man. Ricketts, however, did not complete this phase of his experimental work. Heinemann and Moore [5] continued the work of Ricketts in 1911. These authors prepared a concentrated horse serum of high protective value for guinea-pigs. This serum was produced by repeated inoculations of large quantities of blood virus of infected guinea-pigs into the horse. It was claimed by these authors that the serum protected guinea-pigs injected with the virus of Rocky Mountain spotted fever up to and including the first day of high temperature. The serum was sent to an endemic center in Missoula for use in the treatment of the disease but no record is noted in the literature of its use in man.

Noguchi [6] took up this work in 1923 and showed that an effective immune serum can be produced in a rabbit by subcutaneous inoculation of blood virus of the guinea-pig. This serum protects against the disease in guinea-pigs if given during the incubation period but not if given after the onset of the fever.

Despite these encouraging experimental results there has been no further report of an attempt to increase the potency of immune serum against Rocky Mountain spotted fever, and there has been no recorded example of the use of the serum in the prophylaxis and treatment of the disease in man. This is indeed surprising in view of the need of such a serum. An immune serum would be of unquestioned value as a prophylactic measure in persons who have been bitten in localities known to harbor ticks infected with highly virulent strains of Rickettsia. It would be especially indicated in those cases in which the ticks have been found attached in an engorged state, since it has been shown by Spencer and Parker that infection is most likely to occur after the tick has remained attached to the host for a number of hours and allowed to engorge fully. In light of the available experimental data, the use of the serum in the treatment of the disease is still of doubtful value. However, since the serum is known to possess definite neutralizing powers, beneficial results may probably be obtained if the serum is administered very early in the course of the disease in man. Further investigations on this phase of the problem are much needed.

3. Zinsser, Hans; and Ruiz Castaneda, M.: Studies on Typhus Fever: XI. A Report on the Properties of the Serum of a Horse Immunized with Killed Formalinized Rickettsia, J. Exper. Med. **57:** 391 (March) 1933.

4. Ricketts, H. T., and Gomez, L.: Studies on Immunity in Rocky Mountain Spotted Fever, J. Infect. Dis. **5:** 221, 1908.

5. Heinemann, P. G., and Moore, J. J.: Experimental Therapy of Rocky Mountain Spotted Fever, J. Infect. Dis. **10:** 294, 1912.

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Current Comment

A TEST IN THE DIAGNOSIS OF HODGKIN'S DISEASE

Recent medical literature contains little that is new about Hodgkin's disease. The exact nature of this fatal malady remains unknown, and the diagnosis is often difficult. Experiments recently reported by van Rooyen [1] may stimulate future research. In 1932, Gordon inoculated rabbits and guinea-pigs intracerebrally with suspensions of lymphadenomatous tissue and in a few days these animals showed spastic paralysis of the hind limbs, rigidity, ataxia, and muscular weakness. These effects were not produced when the animals were similarly injected with suspensions of leukemic, sarcomatous and carcinomatous lymphatic tissue. In these experiments the lymphoid tissue affected by Hodgkin's disease seemed to have some properties that lymphoid tissue did not have when affected by other pathologic conditions. At the Royal Infirmary of Edinburgh, van Rooyen applied this phenomenon as a test in the diagnosis of some doubtful cases. He removed at biopsy enlarged glands from five patients with Hodgkin's disease, one patient with pseudoleukemia, and one patient with lymphosarcoma. After keeping a suspension of this material for ten days in the refrigerator, he standardized it and injected 0.45 cc. of the emulsion into the occipital lobe of the brains of rabbits to a depth of about 3 mm. In other animals he injected this suspension similarly into the frontal lobes. With the material from three of the patients with Hodgkin's disease, van Rooyen obtained, in the animals, typically positive results with the test devised by Gordon. The fourth case gave a doubtful result and a fifth case was negative. The doubtful result in the fourth case may have been due to the fact that the specimen was unsuitable, first, because it was small and, secondly, because this gland had been subjected to intensive roentgen therapy before its removal. In the fifth case of Hodgkin's disease in which the result of the test was negative, the gland removed at biopsy was extremely hard and tough, owing to the presence of fibrosis, and uniform suspensions of it could not be prepared for injection into the

1. van Rooyen, C. E.: A Biological Test in the Diagnosis of Hodgkin's Disease, Brit. M. J. **1:** 644 (April 15) 1933.

animals. The results of the test were always negative in animals injected similarly with suspensions of normal, lymphosarcomatous, leukemic and tuberculous lymphatic tissue. The results of the test were negative when the animals were similarly inoculated with streptococcus toxin, sterile milk, dead bacteria, peptone water, finely powdered glass, and some other things. It seemed necessary to allow the suspended material to remain in the refrigerator for varying periods before it became active. Possibly the acuteness of the disease in man bears some relation to the results obtained in the animals. This test deserves further study. It is suggested that glands removed in suspected cases of Hodgkin's disease be subjected not only to histologic and bacteriologic study but also to Gordon's biologic test.

Association News

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts on Tuesday and Thursday from 9:15 to 9:20 a. m., Chicago daylight saving time, which is one hour faster than central standard time, over Station WBBM (770 kilocycles, or 389.4 meters).

The subjects for the week are as follows:

August 22. Food Poisoning.
August 24. Peculiar Accidents.

There is also a fifteen minute talk sponsored by the Association on Saturday morning from 9:45 to 10 o'clock over Station WBBM.

The subject for the week is as follows:

August 26. The Tonsil Operation.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

COLORADO

State Medical Meeting at Colorado Springs.—The sixty-third annual session of the Colorado State Medical Society will be held in Colorado Springs, September 14-16, at the City Auditorium. Dr. Olin West, Chicago, secretary and general manager, American Medical Association, will be the guest speaker at the annual banquet Friday evening, on "Preserving the Professional Aspects of Medical Practice." Guest speakers at the scientific sessions will be:

Dr. John Jay Keegan, Omaha, Surgical Indications in Head Injuries.
Dr. Claud R. G. Forrester, Chicago, Use of Local Anesthesia in Treatment of Fractures.
Dr. Budd C. Corbus, Chicago, Transurethral Resection of Bladder Neck Obstructions.
Dr. George Piness, Los Angeles, The Food Factor in Allergy.

The following Colorado physicians, among others, will also present papers:

Dr. Paul M. Ireland, Pueblo, Tumors of the Thyroid Gland.
Dr. George C. Shivers, Colorado Springs, Avoidance of Pulmonary Complications from Intravenous Arsenicals.
Dr. William H. Crisp, Denver, Improved Surgical Prognosis in Simple Glaucoma.
Dr. Maurice Katzman, Denver, Coronary Thrombosis.
Dr. Willis B. Hardesty, Berthoud, Fifteen Years of Country Practice.
Dr. Isadore D. Bronfin, Denver, Primary Carcinoma of the Lung, Simulating Tuberculosis.

A clinical meeting sponsored by the Colorado Tuberculosis Association will be held Thursday evening, September 14, emphasizing childhood tuberculosis. Drs. Charles O. Giese and John B. Crouch, Colorado Springs, and Harry J. Corper, Kenneth D. A. Allen and Johanna Gelien, all of Denver, will speak. Dr. Gerald B. Webb, Colorado Springs, will be installed as president at the opening scientific session and will make his address Friday afternoon. He succeeds Dr. Frank B. Stephenson, Denver.

DELAWARE

Health at Wilmington.—Telegraphic reports to the U. S. Department of Commerce from eighty-five cities with a total population of 37 million, for the week ended August 5, indicate that the highest mortality rate (20.5) appears for Wilmington, and the rate for the group of cities, 10.6. The mortality rate for Wilmington for the corresponding week last year was 12.3, and for the group of cities, 8.9. The annual rate for eighty-five cities for thirty-one weeks of 1933 was 11.3, as against a rate of 11.6 for the corresponding period of the previous year. Caution should be used in the interpretation of weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

DISTRICT OF COLUMBIA

University News.—The following full time teaching fellows in medicine have been appointed for the coming year at Georgetown University School of Medicine: Drs. Cyrus M. Gormley, Percy A. Bryant, Jr., and William C. Lambert. Dr. Henry Wigderson has been designated full time teaching fellow in surgery.

Dr. Vaughan Resigns.—Dr. George T. Vaughan recently resigned as head of the department of surgery at Georgetown University Hospital and professor of surgery at Georgetown University School of Medicine, after thirty-six years' service in both positions. Dr. Vaughan, who is 74 years of age, will become professor emeritus, and Dr. James A. Cahill, Jr., professor of clinical surgery at Georgetown, will succeed him.

GEORGIA

Society News.—At a meeting of the Sixth District Medical Society in Macon in June, speakers included: Drs. Samuel T. R. Revell, Louisville, on "Amyotrophies and Myotrophies"; Harold C. Atkinson, Macon, "Acute Pains in Muscles, Nerves and Joints," and William H. Kiser, Jr., Atlanta, "Mental Hygiene in Children."——Dr. William C. McCarver, Vidette, among others, addressed a joint meeting of the Burke and Jenkins county medical societies at Millen in June, on "Diarrheas of Infancy and Childhood."——Drs. Frank K. Boland and Stephen T. Barnett, Atlanta, addressed the Cobb County Medical Society, Marietta, July 5, on "Surgical Treatment of Pulmonary Tuberculosis" and "Irritability," respectively.——Dr. Rudolph F. Bell, Thomasville, among others, addressed the Thomas County Medical Society, June 16, on "Rupture of the Uterus During Labor."

ILLINOIS

Medical Department for Industrial Commission.—The State of Illinois Industrial Commission announces the creation of a medical department, with Dr. Philip H. Kreuscher, Chicago, as director, and Drs. Edward H. Rategan and Daniel E. Meany as examiners. The following list of consultants has also been announced:

General Surgery	General Medicine
Dr. Karl A. Meyer	Dr. Frederick Tice
Dr. John A. Wolfer	Dr. Walter W. Hamburger
Dr. John B. O'Donoghue	Dr. Charles A. Elliott
Dr. Raymond W. McNealy	Dr. James H. Hutton
Fractures and Traumatic Surgery	**Roentgen Ray**
Dr. Paul B. Magnuson	Dr. James T. Case
Dr. Kellogg Speed	Dr. Maximilian J. Hubeny
Dr. James J. Callahan	Dr. Hollis E. Potter
Psychiatry and Neurology	**Eye Surgery**
Dr. Francis J. Gerty	Dr. Harry S. Gradle
Dr. Ralph C. Hamill	Dr. Austin A. Hayden
Dr. George W. Hall	Dr. Leroy Thompson
Dr. Lewis J. Pollock	Dr. Sidney Walker, Jr.

Chicago

Dr. Kronfeld Goes to China.—Dr. Peter C. Kronfeld, associate professor of ophthalmology, Division of Biological Sciences, University of Chicago, has resigned to accept a position as head of the department of ophthalmology at Peiping Union Medical College, Peiping, China. Dr. Kronfeld was graduated from the University of Vienna Faculty of Medicine in 1923 and served for a time as assistant in the eye clinic there under Prof. Josef Muller. He came to the University of Chicago in 1928 as assistant professor of ophthalmology. He will leave about September 1 for Peiping, going by way of Vienna.

Hundred Years in Prison for Slaying Physician.—Three youths 17, 18 and 20 years old were sentenced to 100 years each in the penitentiary after a trial in the criminal court of Chicago, August 14, at which they pleaded guilty of the murder of Dr. Bernard F. Garnitz last February. Dr. Garnitz was called from his home on the pretense of an emergency case. He drove to the address given, an empty apartment, and was met by the armed youths, who held him up and shot him in the side. He died, March 11. The length of the sentence for this crime sets a record in the criminal court. Judge Epstein in passing sentence, said: "The testimony in this case shows these defendants to be persons of malignant heart. To impose any sentence other than one which would make it impossible for them to ever become a menace to society would be unthinkable." The Chicago Medical Society kept a close watch on this case, which has been in the courts for seven months. About seventy-five members of the society, including the president, Dr. Austin A. Hayden, the president-elect, Dr. Charles H. Phifer, the secretary, Dr. Thomas P. Foley, and Dr. Julius H. Hess of the board of trustees, were present at the trial. For some months previous to this murder several physicians had been robbed after being lured from home on fake calls and in several cases had been fired upon when they did not respond quickly enough to the demands of the gang.

INDIANA

New State Board of Health.—A new board of health of three members has been appointed by the governor, replacing the former board of four members. The appointees are Drs. Ernest Rupel, Indianapolis; Edmund M. Van Buskirk, Fort Wayne, and John C. Glackman, Rockport.

KENTUCKY

State Medical Meeting at Murray.—The annual session of the Kentucky State Medical Association will be held, September 11-14, at the Murray State Teachers College, Murray, under the presidency of Dr. W. M. Martin, Harlan. Dr. Elbert W. Jackson, Paducah, will deliver the annual oration in surgery, on "Treatment of Perforative Appendicitis," and Dr. Caswell C. Turner, Glasgow, "The Hospital as a Community Problem." At the annual dinner Wednesday evening, September 13, speakers will be Drs. Willard Bartlett, St. Louis, on "A Consideration of Four Eras in Medicine as the Basis for a Prophecy," and Oliver P. Kimball, Cleveland, "Clinical Hypothyroidism." A public meeting will be held Tuesday evening, at which Dr. Martin will deliver his official address and Dr. Robert Sory, Richmond, will show a motion picture illustrating trachoma and trachoma work among white people of the United States. There will be symposiums on contagious diseases, obstetric conditions and acute conditions in the abdomen. Among other speakers will be:

Dr. Fred W. Rankin, Lexington, Cancer of the Colon.
Dr. Joseph Gant Gaither, Hopkinsville, Pyloric Stenosis—A Plea for Early Diagnosis.
Dr. Edward B. Houston, Murray, Significance of Cardiac Pain.
Dr. Saul P. Oldham, Owensboro, Hyperemesis Gravidarum.
Dr. Thomas Cook Smith, Louisville, Anemias in Children.
Dr. Earl C. Walter, Mayfield, Dislocations and Fractures of the Elbow.

LOUISIANA

Society News.—Speakers before the Tri-Parish Medical Society at its meeting in July in Sondheimer were Drs. William H. Hamley, Lake Providence, on malaria, and Gideon D. Williams, Lake Providence, on pellagra.——The Shreveport Medical Society was addressed, recently, by Drs. J. E. Knighton, Shreveport, and Urban Maes, New Orleans, on "Uses of Insulin in Conditions Other Than Diabetes" and "Appendicitis After Forty," respectively.

University News.—A series of twelve lectures on public health opened at the Tulane University summer school, June 22, when Dr. John H. Musser, professor of medicine, spoke on "Heart Disease as a Personal and Social Problem." Other lecturers in the series included Drs. William Harvey Perkins on "Our Personal Responsibility for Positive Health"; Thomas B. H. Anderson, "Growth of Governmental Functions in Protection of Health," and Urban D. Maes, "Public Health Aspects of Cancer."

MICHIGAN

University News.—The board of regents of the University of Michigan Medical School has announced the following promotions on the faculty:

Dr. James Hoyt Maxwell to assistant professor of physiology.
Dr. Carleton Barnhart Peirce to associate professor of roentgenology.
Dr. Francis Bruce Fralick to associate professor of ophthalmology.

Gifts of more than $8,000 for research and for support of the Reuben Peterson instructorship and fellowship were announced.

Society News.—Dr. Carl E. Badgley, Ann Arbor, addressed the Gratiot-Isabella-Clare Counties Medical Society in Alma, July 6, on "Injuries In and About the Ankle."——The Ionia-Montcalm County Medical Society was addressed in Portland, June 13, by Drs. Austin F. Burdick, Lansing, on "Office Treatment and Management of Diseases of the Eye, Ear, Nose and Throat," and Henry D. Chadwick, Detroit, "Modern Treatment of Tuberculosis." The society celebrated its one hundredth anniversary, June 15.

Personal.—Dr. William S. Reveno, Detroit, recently retired as editor of the *Bulletin* of the Wayne County Medical Society after five years' service; Dr. David I. Sugar succeeds him.——Dr. John R. Giffen, Bangor, who has just completed twenty-eight years on the local board of education, has been appointed to another three year term. With the exception of one year, 1915-1916, Dr. Giffen has served on the board since 1904.——Dr. Thomas E. Gibson, Shepherd, has been appointed head of the Isabella County Health Unit.——Dr. Mial R. Lyman, Bad Axe, recently completed fifty years in the practice of medicine.

MINNESOTA

"Tonic" Pedler Leaves the State.—Ray D. Smith abruptly left Minnesota, June 12, rather than stand trial on a charge of practicing healing without a basic science certificate. Smith claimed that he came to St. Paul from Clinton, Ill., and also, it is said, that he had practiced medicine for twelve years and had spent two years at a well known clinic. Following an investigation by the state board of medical examiners he was taken to police headquarters, where he retracted these statements. He was peddling a "Liberty Tonic," said to be manufactured in Memphis, Tenn.

MISSOURI

Research on Physiology of Nerves.—Washington University School of Medicine, St. Louis, has received a grant of $58,500 from the Rockefeller Foundation toward the expense of conducting a five year research project in the physiology of the nervous system, the university has announced. The work to be undertaken is an expansion of investigations on the nature of nervous activity carried out by Drs. Herbert S. Gasser and Joseph Erlanger and will allow correlation of psychologic, biochemical, pathologic and surgical observations with the earlier studies in pure physiology. The new investigations will be made in the laboratories of the new Oscar Johnson Institute for Research chiefly by George H. Bishop, Ph.D., professor of applied physiology in ophthalmology, and Samuel Howard Bartley, Ph.D., research fellow in applied physiology in ophthalmology.

Fall Clinical Conference.—The eleventh annual fall clinical conference of the Kansas City Southwest Clinical Society will be held at the Hotel President, Kansas City, October 3-5. According to the tentative program, the guest speakers will include the following physicians:

John W. Amesse, Denver, Newer Conceptions of Childhood Tuberculosis.
Otto H. Schwarz, St. Louis, Toxemias of Pregnancy.
James Bertram Collip, Montreal, Physiology of the Anterior Lobe of the Pituitary.
Claude F. Dixon, Rochester, Minn., Malignant Growths of the Left Half of the Colon: Their Surgical Treatment.
Jerome M. Lynch, New York, What the General Practitioner Should Know About Rectal Diseases.
Russell L. Haden, Cleveland, Treatment of Arthritis.
George Draper, New York, Man as a Complete Organism in Health and Disease.
Kellogg Speed, Chicago, Clinical and Pathological Consideration of Fractures of the Neck of the Femur.
Edward C. Ellett, Memphis, Tenn., Recent Developments in Ophthalmology and Ophthalmologic Surgery.
Frank J. Novak, Jr., Chicago, Newer Knowledge of Immunology and Its Practical Application in Clinical Otolaryngology.

The program includes special clinics and round table discussions. Other societies meeting during the week will be Frisco Railway Surgical Association, October 2; the Missouri-Kansas Neuropsychiatric Society, October 6, and the Mississippi Valley Conference on Tuberculosis, October 6.

NEW YORK

Lake Keuka Meeting.—Dr. Clare N. Shumway, Painted Post, was elected president of the Lake Keuka Medical and Surgical Association at the annual meeting at the lake, July 13-14, succeeding Dr. Edward T. Wentworth, Rochester. Dr. Thomas W. Maloney, Geneva, was named vice president and Dr. John A. Hatch, Penn Yan, reelected secretary. Among speakers were Drs. Paluel J. Flagg, New York, on "Asphyxia and Resuscitation"; William D. Johnson, Batavia, "Progress of Medicine"; Frederic E. Elliott, Brooklyn, "Essential Questions in the Economics of Medical Service," and Frederick S. Wetherell, Syracuse, "Sympathectomy in Pelvic Pain."

Dr. Van Duyn Celebrates Ninetieth Birthday.—Dr. John Van Duyn, Syracuse, celebrated his ninetieth birthday, July 24. Dr. Van Duyn is a veteran of the Civil War, the Spanish-American War and the World War, having served in France after he was 70 years old. He was at one time superintendent of the Syracuse state school for mental defectives in Syracuse and served in various capacities on the faculty of Syracuse University School of Medicine. A grandson, Dr. John Van Duyn II, who recently graduated from Johns Hopkins University School of Medicine, and a great-grandson, John Van Duyn III, have the same birthday. Dr. Van Duyn is said to be the oldest living graduate of Princeton University. He took his medical degree at the old Kentucky School of Medicine in 1865.

New York City

Changes at New York University.—The chair of surgery at New York University and Bellevue Hospital Medical College has been named the George David Stewart Professorship in honor of the late Dr. Stewart, who occupied the position for nineteen years. Dr. Arthur M. Wright has been appointed the first incumbent of the new chair. Dr. William C. Lusk, for thirty years professor of clinical surgery, has been made professor emeritus. Dr. Isaac Seth Hirsch has been made professor of roentgenology to succeed Dr. Leon T. LeWald, who retired to the inactive list of the medical faculty. In addition, the following promotions have been announced:

Dr. Samuel Brock, associate professor of neurology.
Milton Levy, Ph.D., assistant professor of chemistry.
Dr. Frederic L. Wertham, assistant professor of psychiatry.
Dr. Samuel Bernard Wortis, assistant professor of neurology.

NORTH DAKOTA

Woman Physician Appointed State Health Officer.—Dr. Maysil M. Williams, former director of the division of child hygiene in the state department of public health, has been appointed state health officer, succeeding Dr. Arthur A. Whittemore. The appointment was made by the public health advisory council, a new body created by recent legislation. Dr. Williams is a native of Canada and received her medical degree at the University of Toronto Faculty of Medicine. She also has a degree in public health from the Harvard School of Public Health.

OHIO

Personal.—Dr. John J. Phair, formerly bacteriologist of the Cincinnati Department of Health, has been appointed to the staff of the International Health Division of the Rockefeller Foundation. He will be at the Research Center for Undulant Fever, Montpellier, France.——The honorary degree of doctor of science was conferred on Dr. Julius M. Rogoff, Cleveland, at the annual commencement of Ohio Northern University, Ada.

Society News.—Dr. Frank H. Lahey, Boston, will address the Cleveland Academy of Medicine, September 15, on "Problems in Gastro-Intestinal Surgery."——A joint meeting of the Mahoning County Medical Society and the Mahoning County Bar Association was held, June 27, in Youngstown; Dr. Edwin A. Hamilton, Columbus, and Hon. F. Rollin Hahn, Youngstown, spoke on medicolegal considerations from the points of view of the physician and the lawyer, respectively.——Dr. Richard Dexter, Cleveland, addressed the Ashtabula County Medical Society, June 13, on "Pericarditis, Acute and Chronic."——Dr. Harry L. Hite, Thornville, addressed the Perry County Medical Society, New Lexington, June 19, on "Cod Liver Oil—Its Preparation and Usage."——Dr. George I. Nelson, Columbus, addressed the Hempstead Academy of Medicine, Portsmouth, on cardiovascular disease.——Dr. Isaac B. Harris, Columbus, discussed acute appendicitis at a meeting of the Madison County Medical Society at the London Country Club, June 21.——Dr. Fred W. Lane, Cambridge, spoke on essential hypertension before the Guernsey County Medical Society, Cambridge, July 20.——Dr. Daniel C. Houser, Urbana, addressed the Greene County Medical Society, Xenia, July 6, on "The Future of Medicine."

PENNSYLVANIA

Society News.—Dr. William L. Estes, Jr., Bethlehem, was elected president and Dr. Jacob Treichler Butz, Allentown, secretary, of the Lehigh Valley Medical Society at the annual summer session at Pocono Manor, August 3.——Speakers at a meeting of the Fayette County Medical Society, Uniontown, August 3, were Drs. William W. Briant, Jr., Pittsburgh, on "Status of the Dick Test for Scarlet Fever"; Edward J. McCague, Pittsburgh, "Bladder Manifestations of Renal Disease"; Walter F. Donaldson, Harrisburg, "The New Deal for Practicing Physicians" and Donald Guthrie, Sayre, "Our Traditional Purpose."

SOUTH CAROLINA

Committees on Economics.—The house of delegates of the South Carolina Medical Association at the annual meeting in Spartanburg appointed the following physicians to form a committee on economics: Drs. James W. Jervey, Greenville; Robert Wilson, Charleston; James Adams Hayne, Columbia; James Moss Beeler, Spartanburg, and Douglas Jennings, Bennettsville. A number of county societies have since appointed similar committees.

Personal.—Dr. Benton M. Montgomery, Marion, has been appointed health officer of Dorchester County, succeeding Dr. George R. O'Daniel.——Dr. William A. Carrigan, Society Hill, has resigned as health officer of Darlington County to accept a similar position in Horry County. Dr. George B. Edwards, Darlington, has been appointed to succeed Dr. Carrigan.——Dr. Julius A. Mood, Sumter, received the honorary degree of doctor of laws from Wofford College, Spartanburg, at the annual commencement, June 5. He was graduated from Wofford in 1875.

TENNESSEE

University News.—Dr. Max Goltman, professor emeritus of surgery at the University of Tennessee College of Medicine, who died recently, left to the university $1,044.87 for the student loan fund. Dr. Goltman started the fund, which for several years has provided funds for one student and which has been named the Goltman Memorial Fund.

Society News.—Drs. Cassius Ward Friberg and Lee K. Gibson, Johnson City, addressed the Washington County Medical Society, July 6, on the puerperium and on goiter, respectively.——Dr. Conley H. Sanford, Memphis, addressed the Tri-County Medical Association (Carroll, Weakley and Henry counties), July 11, on goiter.——Dr. Leon D. Cotten, Alexandria, addressed the Wilson County Medical Society, August 3, on "Prevention of Rheumatic Heart Disease."——Drs. Walter G. Bogart and Daniel N. Williams, Chattanooga, addressed the Hamilton County Medical Society, August 10, on "Difficult Labor" and "Mechanical Dystocias," respectively.——The medical society of Roane, Loudon, Monroe and McMinn counties held a meeting at Athens, June 15, at which speakers were, among others, Drs. James Gilbert Eblen, Lenoir City, on "Nephritis in Children" and Harold D. Long, Chattanooga, "Management of Summer Diarrheas in Children."——Drs. Douglas C. Seward and Oval N. Bryan, Nashville, addressed the Hardin-Lawrence-Lewis-Perry-Wayne Counties Medical Society, Linden, June 27, on "Subdiaphragmatic Abscesses" and "Agranulocytosis," respectively.——Dr. John Shelton Horsley, Richmond, Va., addressed the Carter County Medical Society and physicians of adjacent counties at Elizabethton, July 29, on "Indigestion."

TEXAS

University News.—A portrait of Dr. Walter H. Moursund, dean of Baylor University College of Medicine, Dallas, was presented to the school by the June graduating class. Dr. Raymond S. Willis, president of the graduating class, made the presentation and Drs. William W. Looney and Milford O. Rouse, the acceptance.

Health Departments Merge.—The health services of the city and the county of El Paso have recently merged, with Dr. Thomas J. McCamant, formerly county health officer, as commissioner, according to newspaper reports. It was planned to retain all employees and add a sanitary engineer, a sanitary inspector and two nurses. The Rockefeller Foundation was to aid in the support of the combined departments, the reports stated.

VERMONT

State Requires Internship for License.—After this year, certificates to practice medicine in Vermont will be issued only to applicants who have had one year's internship in a hospital approved by the board. The laws of Vermont have contained authority for this requirement for several years, but the board has not taken advantage of it before. Dr. Frank A. Walsh, Readsboro, has recently resigned from the board.

VIRGINIA

Society News.—Dr. John Blair Spencer, Gloucester, entertained the Mid-Tidewater Medical Society aboard his yacht on a cruise down Chesapeake Bay, July 4, with Dr. Warren F. Draper, state health officer, as guest of honor.——A special committee of the Richmond Academy of Medicine is studying the medical situation in Richmond in connection with a study

of the report of the Committee on the Costs of Medical Care. Dr. Claude C. Coleman is chairman and members are Drs. Stuart McGuire, Rochier W. Miller, Warren F. Draper, Manfred Call, James McC. Tompkins and Charles M. Caravati.

WASHINGTON

Society News.—Three Seattle physicians addressed the Lewis County Medical Society in Chehalis, June 12, as follows: Drs. Pius A. Rohrer, "Transurethral Resection"; Joel W. Baker, "Hemorrhoids and Rectal Surgery," and Louis H. Edmunds, "Treatment of Fractures In and About the Knee Joint."——Dr. John F. Beatty, Everett, among others, read a paper on "Disorders of the Heartbeat," at a meeting of the annual joint meeting of the Snohomish, Skagit and Whatcom County medical societies.

GENERAL

The Chompret Prize.—The recent award of the first Chompret Prize to Dr. Oliver T. Osborne, Yale University School of Medicine, New Haven, Conn., reported in THE JOURNAL, July 22, page 287, was made by the International Academy of Stomatology in cooperation with the American Society of Stomatologists, not the American Stomatological Association. Additional information concerning future competition for this prize may be obtained from Irene Woodcock, D.D.S., 133 East Fifty-Eighth Street, New York.

Whole Time Health Officers.—Nearly 600 counties in the United States have health officers who devote their entire time to their official duties, according to a directory published by the U. S. Public Health Service, in *Public Health Reports*, July 14. In several states groups of counties, varying from two to ten, are combined in districts with one health officer. Kentucky, which has 120 small counties, has 81 health officers; Alabama, with 67 counties, has 52 full time health officers; Ohio, with 88 counties, 44 health officers, and Tennessee, with 95 counties, 40 health officers. In New York, where the township and village are the more important governmental units, only four counties have health service organized on a county basis, with full time officers. The names are listed as of January 1.

American Academy of Ophthalmology and Otolaryngology.—The thirty-eighth annual convention of the American Academy of Ophthalmology and Otolaryngology will be held under the presidency of Dr. Burt R. Shurly, Detroit, in Boston, September 16-22, with headquarters at the Hotel Statler. Major Gen. Robert U. Patterson, surgeon general of the U. S. Army, will be the academy's guest of honor and will deliver an address at the opening joint session, September 18, on "Progress in Ophthalmology in the Military Service Since Civil War Times." Another guest of honor will be Dr. Henry L. Swain, New Haven, Conn. For Sunday afternoon, September 17, the academy has arranged a public meeting at which the following program will be presented after an address by Gov. Joseph B. Ely:

Dr. Edward H. Cary, Dallas, Texas, Cultural, Spiritual and Material Medicine.
Dr. Edward Jackson, Denver, Concerning Eyestrain.
Dr. William L. Benedict, Rochester, Minn., Facts and Fallacies About the Home Use of Eye Remedies.
Dr. Wells P. Eagleton, Newark, N. J., Colds—What They Can Do to Our Ears and Our Brain.

A symposium on principles of modern surgery will be presented by Drs. Frank H. Lahey, Boston, John M. Wheeler, New York, and William V. Mullin, Cleveland. Sectional meetings and pathologic conferences will occupy the principal part of the week, and Friday afternoon will be devoted to a visit to Harvard University Medical School, where a program explaining the Harvard system of graduate instruction will be presented. The annual golf tournament will be held Tuesday afternoon, September 19.

Another Way of Swindling Physicians.—Two physicians, one from Kentucky and one from Missouri, have recently reported that a man giving the name L. E. Gibson has swindled them of small sums by drafts drawn on the Atlas Life Insurance Company of New Orleans. In both cases he asked the physicians to give him hypodermics of morphine and paid for the service with drafts, signing his name as an agent of the company. The insurance firm wrote both physicians that the man is not affiliated with the company in any way. It appears that he has carried on similar activities in Georgia, Texas, Arizona and California. Another swindle has been reported by a Minnesota physician. In this case a man calling himself Henry R. Jordan announced that he represented the Meredith Publishing Company, Des Moines, Iowa. He explained that the company was giving free to farmers who subscribed to their publications an accident insurance policy and that he was to appoint a physician and a dentist in each community to certify claims under these policies. The physician subscribed to the magazine but afterward inquired of the Meredith company whether Jordan was an authorized representative and found that he was not. The publishing firm refunded the physician's money and promised to investigate the man's activities. A similar "racket" was reported by a New York physician, who fell victim to a young man who claimed to represent the "National Automobile Association." He was looking for a physician to act as the association's agent and care for any policyholders who might be injured in the vicinity. It was required, however, that the physician be a member of the association, for which $15 was collected. The check was cashed and nothing more was heard. Later communication with the National Automobile Chamber of Commerce revealed that the so-called association was unknown to them.

Psychiatrists Establish Examining Board.—At the annual meeting of the American Psychiatric Association in Boston in May, it was decided to establish a board to pass on the qualifications of physicians who seek standing as specialists in treatment of mental and nervous diseases. Dr. Clarence O. Cheney, New York, was appointed chairman of the board, and the members are Drs. William Alanson White, Washington, D. C.; Adolf Meyer, Baltimore; Franklin G. Ebaugh, Denver, and C. Macfie Campbell, Boston. This action was taken after a special conference of the association with the National Committee for Mental Hygiene. In accordance with recommendations of this conference, the board will draw up standards for premedical and medical training for internship and will determine requirements for graduate training which the applicant for certification must have and for the subsequent awarding of a diploma. The conference suggested that candidates for the board's certificate, or diploma, should be required to have at least six years' special training and experience in this field after graduation and internship in an approved hospital, before they can qualify for a diploma. The functions of the board were defined as follows:

1. To establish standards of fitness for the practice of psychiatry.
2. To obtain information and prepare lists of universities, hospitals and preceptors recognized as competent to give part or all of the training requisite for the practice of psychiatry.
3. To arrange, control and conduct examinations to determine the qualifications of those who desire to practice psychiatry.
4. To issue a diploma or other evidence of special knowledge in the field of psychiatry to those who become voluntary candidates therefor and who meet the established standards.
5. To serve hospitals and medical schools by preparing lists of practitioners who shall have been certified by the board.

The proposed diploma will not, it was emphasized, purport to confer any degree or legal qualifications, the aim of the board being to elevate the standards of qualifications for specialists and to certify those who voluntarily comply with its requirements.

American Congress of Physical Therapy.—The twelfth annual scientific session of the American Congress of Physical Therapy will be held in Chicago, September 11-16, at the Palmer House. At the opening session Dr. Albert F. Tyler, Omaha, will be installed as president, succeeding Dr. Gustav Kolischer, Chicago. Dr. Tyler will deliver an address on "Progress of Physical Therapy." At this session the first annual William Benham Snow Memorial Lecture will be presented by Dr. André Halphen, Paris, France, on "Electropyrexia: Newer Technic and Therapeutic Applications." The sectional meetings will be devoted largely to symposiums on the following subjects: hyperpyrexia, arthritis, gynecology, electrosurgery, genito-urinary diseases, transurethral resection of the prostate, ultraviolet in otolaryngology, electric ionization in otolaryngology, tonsil electrosurgery, stomatology and cancer of the head and neck. Speakers before other meetings will include:

Dr. Chevalier L. Jackson, Philadelphia, Dysfunction of the Lower Esophagus.
Dr. Charles B. Gaffney, Chicago, Physical Therapy in Mental Hospitals.
Dr. John Severy Hibben, Pasadena, Calif., Therapeutic Considerations of Photochemical Immunization: Preliminary Report.
Dr. Bernard Fantus, Chicago, Relation of Physical Therapy to Other Forms of Therapy.
Dr. William Bierman, New York, Therapeutic Use of Thermostatically Controlled Heat.
Dr. James T. Case, Chicago, X-Ray Observations of the Mechanical Physiology of the Colon.
Dr. Frederick H. Morse, Boston, Colonic Irrigation Combined with Wave Current Therapy.

There will be sectional clinics at the hotel Tuesday and Wednesday morning and hospital clinics, Friday. The annual banquet will be held jointly with the American Academy of Physical Medicine, Wednesday evening, September 13, at the Palmer House. Among speakers will be Drs. Morris Fishbein,

Chicago, editor of THE JOURNAL, on "The Relation of the American Medical Association to Physical Therapy," and John S. Coulter, Chicago, "The Aims of the Council on Physical Therapy."

FOREIGN

Society News.—Drs. Max Einhorn, New York, and Carl F. Cori, Kirkwood, Mo., will represent the United States at the fourteenth annual international medical postgraduate course in balneology and balneotherapy at Carlsbad, Czechoslovakia, September 10-16. Dr. Einhorn will discuss Banti's disease and Dr. Cori, the influence of epinephrine on carbohydrate metabolism.

New Building at Leeds.—The Algernon Firth Institute of Pathology of the University of Leeds was opened in April. The departments of pathology and bacteriology and of experimental pathology and cancer research, which have been in temporary quarters for some years, will now be centralized in this building, which contains also a large museum space. It was built at a cost of £50,000, of which Sir Algernon F. Firth gave the university £25,000 for cancer research.

British Medical Election.—Dr. Frank W. Ramsay, Bournemouth, was elected president of the British Medical Association for 1934-1935 at the annual session in Dublin in July. Dr. Thomas G. Moorhead, regius professor of physic, University of Dublin, was inducted into the presidency for the present year, succeeding Lord Dawson of Penn. Dr. Ramsay is consulting surgeon to the Royal Victoria Hospital, Bournemouth, and Victoria Hospital, Wimborne. The 1934 session will be held in Bournemouth.

International Congress of Radiology.—The fourth International Congress of Radiology will be held in Zurich, Switzerland, July 24-31, 1934. Members of radiologic societies in all countries and persons introduced by such societies are invited to attend. At the opening sessions, speakers from thirty-two countries will report on the organization of cancer campaigns in each country represented. All radiologic societies are urged to send as soon as possible a list of members of their societies to the general secretary, Dr. Hans E. Walther, Gloriastrasse 14, Zurich.

Graduate School Buildings Begun.—The Chancellor of the Exchequer, Mr. Neville Chamberlain, officiated at the laying of the foundation stone of the new British Post-Graduate Medical School, in Hammersmith, July 17. The new school, which is to be a part of the University of London, is to be associated with a public hospital administered by the London County Council. The government has agreed to contribute £100,000 for the building and equipment of the school and will provide annual grants toward its maintenance. Sir Austen Chamberlain is chairman of the governing body of the school.

New Secretary of Medical Research Council.—Prof. Edward Mellanby, until recently professor of pharmacology at the University of Sheffield, has been appointed secretary of the Medical Research Council of Great Britain to succeed the late Sir Walter Morley Fletcher. Professor Mellanby has been a member of the council since 1931. He recently resigned his post at Sheffield to become Sheild professor of pharmacology at Cambridge. He is especially known for his research on rickets, for which he was awarded the Royal Medal of the Royal Society last year. In 1922 the Royal College of Physicians of London chose him as Oliver Sharpey lecturer and in 1933 as Croonian lecturer. He will assume the secretaryship in January, 1934.

Personal.—Dr. David F. Fraser-Harris, Chiswick, London, received the triennial prize in the history of medicine awarded by the University of Glasgow, Scotland, for an essay on "Antiseptics Before Lister."——The honorary degree of doctor of laws was conferred on Sir Henry Dale, director of the National Institute for Medical Research and secretary of the Royal Society of England, by the University of Edinburgh, June 30. Sir Henry recently visited the United States.——Prof. Harold Collinson has been chosen head of the department of surgery of the University of Leeds, England, succeeding Professor Dobson.——The University of Glasgow recently conferred the honorary degree of doctor of laws on Prof. William Blair Bell, past president of the British College of Obstetricians and Gynecologists.

CORRECTION

Chemotherapeutic Index.—In a Query and Minor Note in THE JOURNAL, July 29, page 391, entitled "Chemotherapeutic Index—Neoarsphenamine Claims," the word minimal appears both above and below the line in the equation. The word above the line should have been maximal.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 29, 1933.

The Dublin Meeting of the British Medical Association

The one hundred and first annual meeting of the British Medical Association, in Dublin, was a great success from both the scientific and the social standpoint. The warmth of the Irish welcome to members from Great Britain was in no way diminished by the antagonism existing between their respective governments.

THE PRESIDENT'S ADDRESS

The president, Dr. T. Gillman Moorhead, regius professor of medicine at Trinity College, Dublin, and president of the Royal College of Physicians, delivered his address, on "The Work of the British Medical Association in Ireland." Referring to the current criticism of medical education, he pointed out that at the first meeting of the association in Ireland, in 1867, discussions took place on the subject in which names famous in Irish medicine figured. Sir Dominic Corrigan devoted a lengthy paper to the subject, while Prof. R. W. Smith, who delivered the address on surgery, also made suggestions. The fundamental idea in our methods should be, in the words of Locke, "to give the student a relish for knowledge and a scientific outlook." As the mental capacity of the average person is limited, the subjects should be taught from a vocational standpoint and with a view to illustrating scientific principles. Dr. Moorhead deplored the recommendation of the General Medical Council that special courses should be given on so many specialties. At any rate these special courses should have their corrective in the outpatient department, where patients not already labeled will be seen by the student and where habits of rapid diagnosis may be acquired. There the student will see patients in exactly the same way as he will see them after qualification, whereas the systematic study, for example, of tuberculosis or venereal disease in hospitals entirely devoted to the treatment of such cases presents the patient from a different angle. Specialized courses were important when a student had already acquired a general grasp of the principles of his profession. Dr. Moorhead had always held that all that could be done in the course of the medical curriculum was to instil a broad knowledge of principles. With these a student placed on his own responsibility was capable of continuing his education and of acquiring all the details which he required with extraordinary rapidity. Those who spoke at the first Dublin meeting grasped the true meaning of medical education and gave a great impetus to the realization of their wishes. The remainder of the address was devoted to the part played by the British Medical Association in improving public health in Ireland and the conditions of the "dispensary doctors," who are paid by the state for attending the working classes.

THE EFFECTS OF MOTORING ON HEALTH

In the Section of Medical Sociology, Sir William Wheeler, a surgeon, opened a discussion on the effects of motoring on health. Automobiles were a great advantage in the rapidity of transport of the physician in urgent cases or of the patient to the hospital, but against this must be put the cost of bodily wear and tear of the physician in prolonged traveling by automobile. There were fatigue, eyestrain, and fear of accidents. No surgeon should drive his car any considerable distance if an operation was contemplated. This produced fatigue at a time when alertness was demanded. In some cases the fatigue was overpowering and after hairbreadth escapes medical drivers had to pull up and sleep by the roadside. Another danger was poisoning by exhaust gases. The blood of traffic policemen

had been found to contain carbon monoxide, and the blood of those who constantly motored must be similarly affected. The fumes were cumulative in action and predisposed to pulmonary and other diseases.

The nuisance of the noise made by automobiles at night was mentioned in the discussion. The high mortality of the roads was attributed to bad driving, but the man who killed a pedestrian always got off. Lieutenant Colonel Pickard of the Safety First Association said that half of those killed in road accidents in Great Britain were pedestrians, one fourth motor cyclists and from one eighth to one sixth pedal cyclists. Most of the children killed were under 6, and most of the adult pedestrians were over 45. Youthful motorists were the worst sufferers. Human failure accounted for 85 per cent of the accidents, road or vehicle defects for but few. Mr. Zachary Cope, a surgeon, pointed out that accidents were more common in cities and congested parts, but the proportion of those fatal was only half that of accidents in the surrounding country, because of the greater speed. He had given up driving because he found that no one could do justice to an operation after it. Dr. MacErlean, Dublin city coroner, said that his experience showed that most accidents to pedestrians occurred near the curb and when cars were going slowly. The majority occurred when the pedestrian was stepping off the path. Cases of drunken motorists did not occur much in Ireland.

VITAMINS IN PRACTICAL EXPERIENCE

In the Section of Diseases of Children, Dr. Leslie Harris said that correct nutrition could not be left to instinct, to the use of "natural unspoiled foods," to a varied diet or to a process of free selection. Recent official reports showed that no less than 80 to 90 per cent of the elementary school population of London gave evidence of having had some degree of rickets, notwithstanding the decreasing severity of the disease. Under our climatic conditions, rickets was almost inevitable if special prophylactic measures were not taken. Cod liver oil had proved a sterling remedy in the past but had the disadvantage that it might be impracticable to give enough for protection in every case. The most certain remedy was viosterol. Correct dosage was essential, as excess produced hypervitaminosis.

Vitamin A could not be regarded as a general anti-infective agent. Although no evidence existed of any widespread deficiency in this country comparable to that of vitamin D, it was advisable to see that the diets contained an adequate supply. The infant received only a moderate supply prenatally and in the milk. The effect of adding extra vitamin B to the infant's diet required further study. There was no conclusive evidence that lack of this vitamin was responsible for the prevalence of constipation.

All infants should be dosed with vitamin C in the form of orange juice. It was destroyed to a greater or lesser extent in the pasteurization of milk, which, however, was never an active source. Adequate nutrition was not possible for certain sections of the community under existing economic conditions, and much scientific knowledge of nutrition already won failed to gain sufficiently wide recognition or practical application.

GYNECOLOGIC ASPECTS OF ENDOCRINOLOGY

In the Section of Obstetrics and Gynecology, Dr. Emil Novak of Baltimore said that the practice of gynecology without at least some knowledge of endocrinology was fast becoming an incongruity. It was this asset plus a knowledge of gynecologic pathology which marked the difference between the real gynecologist and the mere gynecologic operator.

COMPULSORY VACCINATION

A motion reaffirming belief in the efficacy of vaccination, but expressing the view that the time had arrived to consider whether greater protection against smallpox would be afforded by voluntary rather than compulsory vaccination was brought forward. It was pointed out that compulsion now existed only in name and not in fact (exemption being secured by a declaration of conscientious objection). A great obstacle to the education of the public in the matter of vaccination was the natural objection to anything in the way of compulsion. The motion received little support. An amendment was moved expressing belief that vaccination and revaccination provided the only effective methods known for preventing smallpox and that the association would welcome any additional methods of encouraging their more extended employment. The amendment was carried by a large majority.

MEDICAL EDUCATION

A report of the committee of the council of the association on medical education was submitted. The state of the profession was such today that the student preparing for it should be required to give evidence that he had reached a higher standard in some subjects of general education than was the case at present, and that he was grounded fundamentally in the general principles of chemistry, physics and biology. Then in the course of the medical curriculum anatomy and physiology should be taught as interrelated subjects and with the object of studying the living body rather than the dead. A lengthened period would be available for clinical study, which might be divided into two periods, one of not less than two and one-half years on much the present lines, with less attention to specialism than now, and the second a continued clinical period thereafter of not more than nine months, in which clinical instruction should be accompanied by a certain amount of responsible experience. A lengthy discussion took place in which it was stated by a member of the council, Sir Ewen Maclean, that the great urge for reconsideration of the medical curriculum came from America, where the numbers joining the profession led to a crisis. That position had not been reached in this country, but the time would come when a higher entrance standard for students would be amply justified. The report of the committee was approved unanimously.

PARIS

(From Our Regular Correspondent)

July 5, 1933.

Applications of Heat to the Medulla Oblongata

Research presented before the Academy of Medicine by Mr. and Mrs. André Pupier and Mr. René Prieur has shown the good effects, in the treatment of vomiting of widely different origin, of the application of heat to the medulla oblongata, which appears to be involved in the mechanism of many cases of vomiting. The causes of vomiting are many, and the incitations to vomiting may have various points of origin—abdominal viscera, pharynx, inner ear—all of which involve the medulla oblongata. Certain poisons, such as apomorphine, act directly on the medulla oblongata and provoke vomiting. Further, the masseurs of India massage the back of the neck of submerged and asphyxiated persons to restore the vitality of the bulb. The authors raise the question whether an exterior physical action, more particularly the application of heat to the bulb, would not forestall or check vomiting irrespective of the cause. The necessary thermic effect was accomplished by means of electricity. With a temperature of about 50 C. (122 F.), heat applications were found to be effective when continued for from two to ten minutes. With the fluoroscopic screen one can observe that the action of heat on the bulb eliminates spasms of the pylorus that have not yielded to the usual therapeutics. The vomiting of pregnancy, other forms resulting from hepatic or gastric disorders, nausea due to various modes of locomotion (railway train, boat, automobile, airplane) were quickly checked

in nearly every case. Even seasickness was much benefited. Migraine and insomnia were favorably influenced; urticaria was attenuated. From numerous observations, furnished by both patients and physicians and collected by the authors, it appears that the applications of heat to the bulb have given good results in more than 90 per cent of the cases in which they have been employed.

Congress of the French Society of Gynecology

The second Congrès de la société française de gynécologie convened, June 3-5, at Luxeuil, under the chairmanship of Dr. Pierra, chief physician of the center, and under the honorary chairmanship of Professor Keiffer of Brussels. A large number of gynecologists attended, representing many foreign countries, including Argentina, Belgium, Chile, Italy, Rumania, Spain and Switzerland. The chief topic for discussion was "Pain in Gynecologic Practice."

F. and G. Jayle considered the innervation of the female genital apparatus, the pelvis and the perineum. They set up an anatomic classification of pain: peritoneal pain, visceral pain, cellular pain, pain due to compression, and central algias. These pains are due most commonly to a complication of phenomena involving simultaneously the two nervous systems. Professor Keiffer presented a study on the physiology of the genital nervous apparatus in woman.

Professor Binet of Nancy discussed the semeiologic value of pain in gynecologic disorders, its interpretation, its significance and its relations with purely psychic phenomena. X. Colaneri and F. Douay of Paris proposed the classification of abdominopelvic pains. Professor Laffont of Algiers read a paper on extrapelvic pain.

PAIN FROM THE THERAPEUTIC POINT OF VIEW

The second half of the congress discussed the therapeutic problem of pain. Dr. L. M. Pierra considered the indications for such therapy, which must always be based on the anatomy of the organic lesion, though that lesion be never so slight, and to which one must give careful attention before considering the psychic factor, the importance of which must not, however, be forgotten. He reviewed the various modes of treatment for periodic or continued pains.

Professor Timmern, L. Netter and A. Pecker reviewed the physical therapeutic methods for the treatment of pain: electrotherapy, irradiations and kinesitherapy, with their respective indications and their forms of technic. Professor Cotte of Lyons presented the surgical forms of treatment for the types of pain in the field of gynecology; periarterial sympathectomy, resection of the presacral nerve, section of the internal spermatic plexus, ovarian innervations, neurotomies of the internal pudendal nerve, and chordotomies, of which he gave the technic and indications.

Medical School in French West Africa

The Academy of Colonial Sciences heard recently an account given by Dr. M. Blanchard of the school of medicine of French West Africa, which was founded in 1919 for the purpose of training native physicians, midwives, veterinarians, and, later, visiting nurses. Recruiting is done either among the pupils of the Ecole William-Ponty, in Gorée, Senegal, or among the pupils of the Lycée Faidherbe in St. Louis, Senegal. The candidates must submit to a competitive examination and must hold various certificates or diplomas. They agree to serve for ten years. All their expenses while in school are defrayed by the authorities. The school has graduated 120 physicians, 18 pharmacists, 5 veterinarians, 175 midwives and 22 visiting nurses, all natives. Further, the school functions as a center of public hygiene. Cases of syphilis are detected here, and vaccinations against tuberculosis are made. In 1932, 1,452 vaccinations with the B C G vaccine were made. The total number of pupils pursuing courses in the school year 1932-1933 was 141. Dahomey furnishes the largest number of pupils (thirty physicians and sixty-eight midwives); Sudan comes next (thirty-one physicians and thirty-nine midwives).

Rat-Catching Cats

As a result of the crusade carried on by Dr. Loir, director of the public health service of Havre (and a nephew of Pasteur), the destruction of rats by the use of a special breed of cats trained for the purpose is proceeding rapidly. The wharves of Havre have been completely rid of rats. Mr. Herriot, the mayor of Lyons, has created in the city a place for the breeding and training of rat-catching cats, the results of which have met all expectations. Mr. Chiappe, the prefect of police of Paris, has secured from the municipal council an appropriation for a breeding place for rat-catching cats, which will be installed in the abattoirs at Vaugirard, where meat that would otherwise be wasted will be given the cats. For the initial cost of installation and for the payment of wages to the personnel in charge of the breeding place, the prefect requested an appropriation of only 39,750 francs ($2,158), 30,000 francs of which will be supplied by the city of Paris and the remainder by the department of the Seine.

BERLIN

(From Our Regular Correspondent)

July 10, 1933.

The Compulsory Work Service and Medical Students

The voluntary work service (THE JOURNAL, April 8, p. 1122), which was designed to provide work for unemployed juveniles, whereby their health and morale would be benefited, has been changed by the new government into a compulsory work service, in which educational and political factors are interwoven. The plan is that the work service, by September 30, shall comprise 300,000 men, which number will be increased by Jan. 1, 1934, to 350,000 men, and by April 1, 1934, to 700,000 workers. The compulsory work service affects all classes and covers a period of two years. No provision is made for one-year volunteers, as in the German army before the war, in case entrants had completed a certain number of classes in the secondary schools. Exemptions will be granted only by reason of bodily unfitness or on the basis of special conditions in civil life. The person so exempted must pay a work tax in lieu of service. As regards physicians, engineers, technicians, and representatives of other professions, who might claim special consideration in the work service, special privileges in the application and the distribution of the work service period can be granted only to the extent that professional studies must not be interfered with unduly. Rust, Prussian minister of public instruction, addressed the students gathered in the opera house square in Berlin and explained the new plan. He stated that the plan of creating a compulsory work service for students had developed from the idea of the work year, which was designed only to check the flood of students entering the universities. A student will now serve one year in the work service before entering the university. He will learn to perform physical labor alongside laborers, farmers and craftsmen. Students will receive no privileged treatment; they will find a spade ready for them and a very primitive camp. Those who fail to make good in work camps will lose the right to serve as academic leaders in Germany. The work service is designed to be a molder of character. The really great and practical school does not lie in the secondary schools or in the universities but in the camp of the work service, where instruction and the spoken word cease and actual deeds begin. In the camp, practical views of the world and of life must be inculcated. At first only students of the first four semesters will be enrolled. It has been decided that the fourth semester shall begin its work service during the fall vacation.

The Recent General Census

A preliminary report of the results of the census of the German reich, recently completed, is now available, after three weeks. June 16, the population of Germany (exclusive of transients) was 65,300,000. In addition, there is the Saar region (at present separated from Germany) with a population of about 830,000. The total of 66,100,000 is about 1,700,000 less than the population, before the war, of the undiminished territory. Compared with the census of June 16, 1925, the 1933 census shows an increase of about 2,700,000, or 4.4 per cent (exclusive of the Saar region). The male sex is represented by 31,700,000, and the female sex by 33,600,000. The excess of women over men, as was noted also in the 1925 census, showed a decrease. According to the 1933 census there are 1,060 women to 1,000 men. The density of the population has increased from 133 inhabitants per square kilometer in 1925 to 139 in 1933. Of the European countries only Belgium, the Netherlands and England have a higher density than Germany. In actual point of numbers, Germany is, after Russia, the most populous country of Europe. The demographic development since 1858 is shown in the adjoining tabulation.

Year	Population	
1858	36,200,000	
1867	40,000,000	
1892	50,000,000	
1905	60,300,000	
1915	67,800,000	
1916	67,700,000	
1918	66,800,000	
1920	61,800,000	(corresponding to the status of 1907)
1925	63,177,000	
1931	65,437,000	

Prussia, the largest political unit of Germany, has a population of 39,958,073. The population in the fifty-two (with Saarbrücken, fifty-three) large cities, with 100,000 or more inhabitants, is 19,700,000, or 30.1 per cent of the total population. Berlin has a population of 4,202,000. Hamburg, the next largest city, has a population of 1,092,400.

More Uniformity in the Leagues of the Health Insurance Societies

There have been many divisions in the leagues of the krankenkassen, with the result that party jealousies have disturbed cooperative endeavors; but now a merger of the Hauptverband deutscher Krankenkassen, which was under socialist leadership, with the Gesamtverband der Krankenkassen Deutschlands, which leaned toward the Center, has been brought about. The new organization is named Reichsverband der Ortskrankenkassen, which constitutes a uniform league of local krankenkassen. In order to promote the occupational reorganization of health insurance, a merger of the supreme leagues of the krankenkassen (Krankenkassenspitzenverbände) has been effected, in which the federal leagues of the various krankenkassen collaborate.

Reorganization of the Red Cross

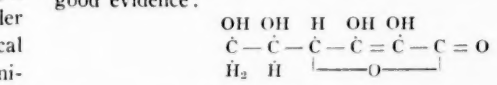
Alongside the sanitary units and the chapters of the Red Cross there have existed other similar organizations, the best known of which was the Arbeiter-Samariter-Bund, under socialist leadership. In Prussia, and in those German länder in which the Samariter-Bund has not been dissolved, this league, after reorganization of its units in keeping with the principles of the national-socialist party, is to be absorbed into the ranks of the Red Cross. This task will be carried out by Dr. Hocheisen, generaloberstabsarzt, retired, the head of the sanitary service of the storm troops, who will soon complete the reorganization of the German Red Cross Society in line with the national-socialist movement.

Vitamins and Cellular Metabolism

A short time ago, Otto Warburg reported his experiments on a "second respiratory ferment," which is entirely different from his "first ferment," is an iron-containing dye resembling hemin, and is apparently widely distributed. It is a yellow, iron-free dye, fixed to protein. If the air is excluded and it is brought in contact with the decomposition products of sugar, it derives hydrogen from them, "oxidizes" them, and is, at the same time, itself reduced, losing its color. If oxygen is admitted, the substance passes the hydrogen on to the oxygen and becomes yellow again. In this manner it transfers hydrogen from cellular substances to oxygen; that is, it contributes to the oxidation of the cellular substances—in other words, to cellular respiration.

Now R. Kuhn, P. Györgyi and Wagner-Jauregg have found the same or a very similar yellow pigment as a component of vitamin B_2 and that this has apparently precisely the same effect. The water-soluble vitamin B consists of several components, two of which are known, B_1, which is active toward beriberi, and B_2, which has many indistinct actions of importance in metabolism. If it is absent, pellagra and other disorders develop, and there are also connections with pernicious anemia and other severe disturbances. This pigment also can be reduced by cellular substances and can be oxidized again by oxygen. Vitamin B appears, therefore, to be identical, as to group, with the "second respiratory ferment" and to play the same part in cellular metabolism; namely, that of a catalyzer of oxidation, which through transport of hydrogen exerts a decisive action on processes affecting the living substance. It would appear, therefore, that the rôle of this vitamin is explained in principle.

The same assumption is now being made for vitamin C, the antiscorbutic principle. Some time ago the astounding announcement of the young Norwegian investigator Rygh flashed across the scientific world. In the meantime it has been shown that his assumption that vitamin C is derived from the well known alkaloid narcotine is an error. On the other hand, the Hungarian investigator Szent-Györgyi was the first to show that vitamin C is a sugar-like substance, so-called ascorbic acid ($C_6H_8O_6$), which he found in orange juice and in young plants. This substance can be obtained in a pure and in a crystalline form; in doses of 1 mg. daily it protects against scurvy. It has the strongest action as yet discovered and can be regarded tentatively as the real vitamin C. The finer details of the structure of vitamin C are not yet established. Just recently, however, Fritz Micheel, who is working with Professor Windaus, in Göttingen, has supported a definite formula with good evidence:



It appears that vitamin C will be the first vitamin to have its action explained. In scurvy, the chain of cellular oxidations necessary for life must have been interrupted. In this connection, the following interesting fact has been established: Dogs and rats can live indefinitely without any intake of vitamin C, without showing symptoms of scurvy. But ascorbic acid in large quantities is always found in their suprarenals. It is evident that they are able to synthesize that acid. Since ascorbic acid, in the metabolism of these animals, probably plays a similar part to that played in other animal species, it appears likely that in these cases it fulfils the functions of a hormone.

Attention may be called to some statements that A. Lüttringhaus of Heidelberg made, concerning the chemistry of vitamin D, at the recent session of the Verein Deutscher Chemiker. After the isolation in pure form from viosterol had been accomplished in Germany and England, in 1931, Windaus of Göttingen isolated, from ergosterol irradiation products, six isomeric substances, and he showed that these are formed photochemically in a definite irreversible succession—sometimes following one another and sometimes side by side. Vitamin D alone has a

rachitic potency, yet its two neighbors in the photochemical series have the property in common with it that they exert a poisonous action in very high doses. Although the composition of the primary substance ergosterol has been abundantly established, no precise statements can be made in regard to the structure of vitamin D or concerning the changes occurring within the molecule as brought about by the irradiation. Not until the vitamin has been secured in a pure state from fish oils will it be decided whether the artificially prepared product is identical with it.

The Notifiable Diseases in 1931

According to recently published statistics of the federal bureau of health, in the year 1931, there occurred only one case of typhus and five cases of leprosy. The ordinary transmissible diseases ran their usual course, though diphtheria, scarlet fever, typhoid and paratyphoid, puerperal fever and trachoma showed a marked decline over the previous year. The morbidity on the basis of 10,000 of population was, for diphtheria, 8.9; cerebrospinal meningitis, 0.1; scarlet fever, 7.4; poliomyelitis, 0.3; meat poisoning, 0.3; paratyphoid, 0.4; typhoid, 0.7; dysentery, 0.4; anthrax, 0.02; puerperal fever, 33. During the period 1925-1931, the years 1929 and 1930 were particularly unfavorable for diphtheria; 1927, 1928 and 1929, for scarlet fever, and 1925 and 1926, for typhoid.

ITALY

(From Our Regular Correspondent)

June 15, 1933.

The Medicosurgical Society of Pavia

The Società medico-chirurgica of Pavia met recently under the chairmanship of Professor Ferrata.

Bonezzi spoke on the variations in some strains of dysenteric bacilli studied with monocytogenic cultures. He proposed certain modifications in the technic of the preparation of such cultures. By the use of Peterfi's micromanipulator he studied a peculiar process of dissociation in certain dysenteric strains in which was produced spontaneously a variation of the fermentative potency on maltose. He found that under such circumstances the presence of the bacteriophage can be excluded, although monocytogenic colonies can be secured that may or may not exert a fermentative action on maltose.

Bianchi and Cattaneo discussed vaccinotherapy by the intravenous route in undulant fever. The injection of a small quantity of vaccine produces an intense reaction only in persons affected with undulant fever, so that it will be found useful as an aid in diagnosis.

Cavallerio presented, as a contribution to the technic of anaerobic cultures, a new type of test tube with two branches, which, on the basis of the principle of the biologic method of Fortner, is adapted for the securing of excellent cultures, in a solid or a fluid medium; also of micro-organisms more sensitive to the action of oxygen.

Ferrari called attention to the behavior of bilirubinemia in pulmonary tuberculosis. In seventy cases he always found bilirubin in the blood, but the average quantity was less than that observed in thirty-five normal persons.

Bordonaro reported his histologic research on the changes in the conjunctival epithelium in cases of trachoma and of ophthalmia neonatorum of nongonorrheal origin. He holds that the discovery of the "inclusions" of Halberstaedter and Provaczek has no special significance, they being due to a chronic irritative state of the conjunctiva. He cultivated, in three cases out of four, a micro-organism like that which he had isolated previously in other trachomatous persons, which proved to be identical with Bacterium granulosis. But on inoculation of the organism in the conjunctiva of the ape he was unable to discover any lesion.

Gavazzeni studied lipemia in splenomegalias of various types and found that in many of these morbid types there is hyperlipemia. The speaker believes that the spleen plays a part in the regulation of the lipoid equilibrium of the organism.

Social Medicine

Before the senate, during the discussion on the proposed budget of the minister of the interior, of which the general management of the public health service constitutes a part, Professor Maragliano spoke on the crusade against tuberculosis. The speaker urged that the current law on compulsory insurance against tuberculosis be extended to teachers and employees. He called the attention of the government to the need of publicity campaigns to instruct the masses in regard to the causes of tuberculous disease. The speaker discussed the scientific methods of combating the disease and expressed the conviction that the application of measures of a doctrinal character would not retard developments. Recently a circular letter was sent out to the prefects urging vaccination against tuberculosis. Professor Maragliano favored compulsory extension of such vaccination by the use of killed vaccines that are absolutely harmless.

Responding to Senator Maragliano and to other speakers, the undersecretary of state pointed out that the government does not regard it as feasible to impose on the citizens the obligation of vaccination against tuberculosis, for the reason that, in the field of experimental science, all doubt in regard to the safety and value of such vaccination has not yet been removed. The government has, however, favored in every way possible voluntary vaccination. Likewise, although it is not regarded as advisable to make antityphoid vaccination compulsory, such compulsory vaccination has been established for persons who are most exposed to contagion, and the prefects have the authority to extend the obligation of vaccination when it shall appear advisable in view of existing circumstances.

Bacillus Tuberculophilus

Professor Puntoni and Dr. Favia, in studying the avirulent strain of human tuberculosis, were able to discover that the peculiar moist and flattened appearance of cultures of that strain on potato medium is due to the presence of a bacillus that, for many years, has lived in association with it. If the mycobacterium is freed from its associate, the cultures regain the dry and marbled aspect that is typical of tubercle bacilli. The authors have named the associated bacillus "Bacillus tuberculophilus" and have described the characteristics in a communication to the Federazione per la lotta contro la tubercolosi. It is gram negative, non-acid resistant, sporogenic and exceedingly polymorphous. The association with the Koch bacillus results to its advantage but the fact that the human strain of pulmonary tuberculosis has become avirulent raises the question whether such biologic mutation may not be due to the action exerted by the tuberculophil bacillus. The speakers tried the association with new tuberculous strains—human, bovine and avian—and secured a positive outcome in eight of the strains studied.

Venesection in the Treatment of Amenorrhea

Dr. Merletti of Ferrara has used venesection as a form of treatment in certain types of amenorrhea. In communicating his results to the Accademia delle scienze mediche e naturali of Ferrara, he said that the use of this method requires a precise diagnosis of the pathogenesis of a given amenorrhea. The method attenuates the disturbances associated with amenorrhea due to the natural or early artificial menopause and may reestablish the regular menstrual rhythm in many cases of amenorrhea due to chilling or to emotional causes. The amount of blood to be withdrawn should be around 200 Gm. Venesection may be, in some cases, repeated after an interval of two or three months. The biologic mechanism of this method of treat-

ment is not clear, but from the clinical point of view the results are good.

The Reticulo-Endothelial System

Professor Luzzatto delivered recently, before the Trieste Medical Society, a lecture on the reticulo-endothelial system. He criticized the methods employed heretofore to establish the functional capacity and referred to the method that he introduced in the clinic, which consists in testing in individual subjects the capacity for the production of cytolytic antibodies. Luzzatto has examined by his method many persons and has become convinced that it will be possible to acquire in this manner practical conceptions regarding the prognosis of infectious diseases. It will be possible, too, he thinks, to classify disorders of the reticulo-endothelial system, the classification having as its basis the only one that is truly feasible for the clinic; namely, the direct observation of the sick.

Professor Alessandri Honored

At the Policlinico in Rome, ceremonies were held recently in celebration of the completion of thirty years of teaching by Prof. Roberto Alessandri, director of the Clinica chirurgica in the capital. For the occasion the pupils of Alessandri published a manual of surgery, and Professor Egidi an "Atlas" on gastric resection; also a special number of *Il Policlinico* containing writings of Italian and foreign surgeons was published. A gold medal was presented to Professor Alessandri.

PRAGUE

(From Our Regular Correspondent)

June 27, 1933.

A Favorable Health Report

The figures on the public health situation have been awaited with interest, as 1932 was the third year of the economic depression. During the winter, the unemployed attained the number of some 800,000, which is about 6 per cent of the whole population. In spite of this, the final record of the year is rather favorable. The population of Czechoslovakia attained the figure of 15,000,000. The birth rate continued to decline but not as rapidly as was seen during the first years of the depression. The general mortality continues to remain low and even to decline in some parts of the country. The general mortality was about 14. This was the sixth year without a case of smallpox registered; this was undoubtedly due to enforcement of the compulsory vaccination and revaccination law. Typhus fever continues to appear sporadically in the eastern part of Czechoslovakia. The blot on the picture is the appearance of diphtheria in epidemic form. During that year a prevalence of diphtheria was registered which has no parallel in the records since the beginning of registration in 1890. Almost 32,000 cases (240 per hundred thousand of population) with some 2,500 deaths (17 per hundred thousand) were due to this disease. The epidemic was concentrated in the western provinces in spite of extensive propaganda for preventive vaccination made there and a relatively high percentage of immunized people in some parts of the country. The high prevalence of diphtheria has been observed simultaneously in surrounding countries. Scarlet fever appeared only in mild form. Typhoid continued to decline in the western part of the state but in the east registered a sharp increase both in incidence and in mortality. Infantile paralysis continued to appear in small epidemics all over the country. In contrast with the past, when the disease was almost unknown in Czechoslovakia, it seems to have established itself during the last three years as a permanent menace to children. Measles and whooping cough did not cause any serious damage. Influenza attained epidemic prevalence in the western part of the country toward the end of the year. The tuberculosis mortality fell the first time below 150 per hundred thousand. The infant mortality rate continued to decline in the western part of Czechoslovakia and attained there the lowest figures in history (around 114). On the contrary, the infant mortality rate for Slovakia and Carpathian Russia continues almost on a horizontal level. It is difficult to say whether the generally favorable picture for 1932 is due to social measures which Czechoslovakia has taken for the protection of its unemployed or whether it is due to causes that lie beyond human power.

Cancer of Lungs Among Uranium Miners

The lung cancer of Joachimstal continues to attract attention. The disease was known for many years among the miners in Schneeberg in Saxony but was described only a few years ago among the miners of the uranium mines in Joachimstal, from which radium is being produced. A commission was set up by the Czechoslovakian government to investigate this disease and its work was endowed by a grant from the president of the republic. The committee ascertained that the disease has been prevalent for many years in these mines but was not diagnosed as such, the high mortality among the miners being attributed to tuberculosis. It was found that about half of the deaths among the miners of Joachimstal can be attributed to the cancer of the lungs. The disease appears among the miners only after many years of work in this region and the average age of those who die of lung cancer does not differ materially from those who die from other causes. The average age of both these groups is about 53 years. The investigative work of the committee was hampered by the attitude of the miners and their families, who refused to submit to periodic examinations and necropsies in case of death. To obviate this, a special ministerial decree was issued which authorizes the chief physician of the miners' insurance to enforce a physical examination of the miners. A special bonus is given to the family of a miner who has died of lung cancer in order to obtain consent for a necropsy. The disease has been put on the list of the occupational diseases that fall under the workmen's compensation act. Besides this a special law is being prepared in the ministry of health which will regulate the preventive measures during the process of fabrication of radium and during its use for therapeutic purposes.

Pension Insurance for Physicians

The medical profession of Czechoslovakia is considering the possibility of obligatory insurance for physicians, especially those who have an insurance practice. It has been mentioned previously on various occasions but was always refused by the profession on the ground that it would represent a further step toward the socialization of medicine. The present economic situation has resulted in a change of view. The principle of pension insurance for physicians has already been officially accepted by the medical organization and a legal basis is now being sought for its application. The main difficulty lies in the fact that physicians claim that they have a right to contribute a portion of the pension fund as have all other kinds of employees. Of course, the case of employment of physicians is complicated because the physicians do not have a single employer, as is the case in most of the occupations, because they work usually for numerous insurance funds. There is in Czechoslovakia a law on pension insurance for independent wage earners but it has never been put into effect. It was not found practical to collect fees from this class of people. Under this law, physicians would not obtain any contribution from their employers. Therefore a solution is sought through a special fund to which both the insurance bodies and the physicians would contribute regularly an equal share.

A Meeting of Cardiologists

A cardiologic congress, organized by the Czechoslovakian Cardiologic Association under the presidency of Prof. V. Libenský, was held in Prague, June 2-4. More than 200

members participated in the congress and about one fourth of them came from foreign contries, especially France, Belgium, Rumania, Poland, Italy, Spain and Great Britain. The main topic for consideration by the congress was the pathology of heart muscle. Prof. A. Clerc of France lectured on the prognostic value of electrocardiographic examinations, and Dr. T. S. Cotton of London on diseases of the myocardium from the clinical point of view. Of the sixty papers read, special attention was paid to the paper of Prof. J. Bělehrádek of Brno on physical chemistry of the heart action and by Prof. T. Pezzi of Milan on roentgen examination in heart disease. The congress was held under the auspices of the president of the republic. Visits were made to medical institutions in Prague and to the famous watering places Karlsbad, Joachimstal and Marienbad. The attendance from foreign countries shows that the Czech Cardiologic Association has a high reputation even outside the country, thanks chiefly to its founder and president.

Death of Professor Rubeška

With the death of Prof. Václav Rubeška has disappeared the last representative of a generation which founded the Czech school of medicine. Professor Rubeška was born in 1854 in southern Bohemia and obtained his medical degree in Prague, where he worked with the gynecologist Pawlík. His chief work as a teacher was the education of midwives, which he brought to a high level. He became the director of the Prague School of Midwives. This chief interest did not prevent him from purely medical teaching. His method was to concentrate on a small number of medical students and to give them a thorough and well rounded training. He wrote a comprehensive textbook on obstetrics. Ninety-three scientific contributions of his in the field of gynecology and obstetrics are scattered in Czech and German periodicals. He was one of the most skilful gynecologic surgeons of Prague. He designed several instruments which are widely used in obstetrics. In spite of his teaching and clinical work, he found time for public activities. He was president of the Association of Czech Physicians, presided over the state health council of Czechoslovakia, was chairman of the gynecologic section of the Czechoslovak Surgical Association, and was head of the Association for Combating Malignant Growths and of the Association for the Protection of Mothers and Children. To the end of his life he kept up the study of foreign languages, which made it possible for him to maintain direct personal contact with many of his colleagues outside the country.

Marriages

JAMES PORTER COLLIER, Birmingham, Ala., to Miss Virginia Slade Lacey of Demopolis, in Mobile, July 8.

ROBERT CATHCART KEYS, Brooklyn, to Miss Ernestine Blanche Rupf of Staten Island, N. Y., June 22.

EDGAR MURRAY BURNS, Madison, Wis., to Miss Alice Gertrude Douglas of North Bend, Ore., July 10.

JOHN MARION BANKHEAD, Silver Spring, Md., to Miss Eleanor Guy of Lowrys, S. C., June 7.

ALVA BROWN CRADDOCK to Miss Anne Hartley Luckett, both of Asheville, N. C., June 12.

CHRIS WALTER CULLNANE, Evansville, Ind., to Miss Lucile Pierce of Indianapolis, June 28.

JOSEPH B. BILDERBACK, to Miss Gwendolyn C. Johnston, both of Portland, Ore., May 27.

PORTER BEVAN BLANCHARD, Madison, Wis., to Miss Jeanette Sowle of Tomah, July 3.

VAUGHN RHEA ELEAZER, Chapin, S. C., to Miss Ella Dunn of Newberry, in June.

NORMAN DE NOSAQUO to Miss Anita Cohen, both of Milwaukee, June 25.

THOMAS LUTHER BYRD, Atlanta, Ga., to Miss Lillian Smith, June 8.

Deaths

William H. Mercur ⊕ Pittsburgh; University of Pennsylvania School of Medicine, Philadelphia, 1883; fellow of the American College of Physicians; member of the American Climatological and Clinical Association and the Association for Research in Nervous and Mental Diseases; aged 72; died, July 16, of myocardial insufficiency.

John Metcalf Maury ⊕ Memphis, Tenn.; University of Pennsylvania School of Medicine, Philadelphia, 1890; professor of gynecology, University of Tennessee College of Medicine; member of the Southern Surgical Association; fellow of the American College of Surgeons; on the staffs of the Memphis General and Baptist Memorial hospitals; aged 64; died, July 10, of heart disease.

James Wesley Wiltse ⊕ Albany, N. Y.; Albany Medical College, 1891; formerly instructor and clinical professor of dermatology and genito-urinary diseases at his alma mater; past president, vice president and secretary of the Albany County Medical Society; since 1922 health officer of Albany; for many years on the staff of St. Peter's Hospital; aged 68; died, July 9.

Augustus V. Wendel ⊕ Newark, N. J.; College of Physicians and Surgeons, Baltimore, 1888; on the staffs of St. James Hospital and the Hospital of St. Barnabas, Newark, and Alexian Brothers' Hospital, Elizabeth; aged 64; died, July 5, at his summer home in Spring Lake, of pneumonia.

Wyatt Heflin Blake, Sheffield, Ala.; Vanderbilt University School of Medicine, Nashville, Tenn., 1883; member and past president of the Medical Association of the State of Alabama; formerly on the staff of the Colbert County Hospital; aged 77; died, July 9, of cerebral hemorrhage.

Joseph L. Edwards, Brownsville, Tenn.; Memphis (Tenn.) Hospital Medical College, 1889; member of the Tennessee State Medical Association; secretary of the Haywood County Medical Society; formerly mayor of Brownsville; aged 69; died, July 7, of cerebral hemorrhage.

Howard Albertus Grube, Grand Rapids, Mich.; University of Michigan Medical School, Ann Arbor, 1891; veteran of the Spanish-American and World wars; aged 68; died, July 6, of cardiovascular renal disease, arteriosclerosis and diabetes mellitus.

Charles Andrew McLurkin, Chester, S. C.; Kentucky School of Medicine, Louisville, 1890; member of the South Carolina Medical Association; served during the World War; aged 66; died, July 2, of acute gastro-enteritis and nephritis.

Norman E. Benson, Albany, Ga.; Atlanta College of Physicians and Surgeons, 1903; member of the Medical Association of Georgia; aged 56; on the staff of the Phoebe Putney Memorial Hospital, where he died, July 4, of myocarditis.

Lloyd Bartmess Foster, Oklahoma City; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1903; aged 57; died, July 2, in the Oklahoma City General Hospital, of bronchopneumonia.

Rountree Wickliffe Wood, Cynthiana, Ky.; University of Louisville School of Medicine, 1903; member of the Kentucky State Medical Association; served during the World War; aged 60; died suddenly, July 4, of heart disease.

Dana Monroe Collier, Nashville, Tenn.; Birmingham (Ala.) Medical College, 1914; served during the World War, on the staff of the Veterans' Administration Hospital; aged 46; died suddenly, July 2, of bronchopneumonia.

Robert Burns, Jr. ⊕ St. Louis; Washington University School of Medicine, St. Louis, 1901; fellow of the American College of Surgeons; served during the World War; aged 53; died, July 17, of a self-inflicted bullet wound.

William Hawthorne Mayne, Los Angeles; University of Southern California College of Medicine, 1900; member of the California Medical Association; aged 60; died, June 10, of carcinoma of the rectum and pyelonephritis.

William Angus White ⊕ New York; University of the City of New York Medical Department, 1896; on the staff of the West Side Hospital and Dispensary; aged 59; died suddenly, July 16, of coronary thrombosis.

James L. Egerton, Hendersonville, N. C.; University of Maryland School of Medicine, Baltimore, 1877; member of the Medical Society of the State of North Carolina; aged 76; died, July 10, of cerebral hemorrhage.

Frederick Schavoir, St. Petersburg, Fla.; College of Physicians and Surgeons, Baltimore, 1887; member of the

Connecticut State Medical Society; aged 73; died, July 9, of diabetic gangrene and hypertension.

Cyrille Vermeren, Chicago; National Medical University, Chicago, 1898; Belgian consul general; was awarded the Cross of Officer of the Order of Leopold; aged 69; died, July 23, of carcinoma of the descending colon.

Van Henry Gwinn, Jacksonville, Fla.; University of Michigan Medical School, Ann Arbor, 1891; member of the Florida Medical Association; aged 64; was found dead in bed, July 8, of probable coronary thrombosis.

George Gillespie Dickson ✠ Los Angeles; Medical Department of the University of Southern California, Los Angeles, 1918; aged 46; died, June 25, of injuries received in an automobile accident.

Henry William Lyding ✠ New York; New York Homeopathic Medical College and Flower Hospital, 1913; on the staff of the New York Ophthalmic Hospital; aged 50; died suddenly, July 16, of heart disease.

William Davison Nettles, McKenzie, Ala.; University of Alabama School of Medicine, 1910; member of the Medical Association of the State of Alabama; aged 49; died suddenly, July 5, of heart disease.

James Hollowell, Parkesburg, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1894; member of the Medical Society of the State of Pennsylvania; aged 59; died, July 5, of heart disease.

Harry Shirk Dissler, Denver, Pa.; Medico-Chirurgical College of Philadelphia, 1903; member of the Medical Society of the State of Pennsylvania; aged 50; died, March 13, of rheumatic endocarditis.

Alonzo Willett Carr, Knoxville, Tenn.; Medical Department, University of Tennessee Medical Department, Nashville, 1890; aged 78; died, July 2, of cerebral hemorrhage and organic heart disease.

C. Ross Miller, Ogdensburg, N. Y.; Syracuse University College of Medicine, 1909; served during the World War; aged 48; died, July 5, in a sanatorium at Ray Brook, of tuberculosis.

Alexander Glenn Davis, Logan, Kan.; Northwestern Medical College, St. Joseph, Mo., 1891; member of the Kansas Medical Society; aged 63; died, May 22, of acute miliary tuberculosis.

Samuel Thomas Ferguson, Goffstown, N. H.; Medical School of Maine, Portland, 1897; member of the New Hampshire Medical Society; aged 64; died, April 24, of coronary thrombosis.

Nelson Drew Wells, Denver; State University of Iowa College of Medicine, Iowa City, 1907; served during the World War; aged 65; died, July 17, of disease of the prostate and bladder.

Manifred Plouding Woodfin, Ironton, Ohio; Howard University College of Medicine, Washington, D. C., 1912; aged 54; died, July 10, of hypostatic pneumonia and paralysis agitans.

Robert Locke McClure, Brownsburg, Ind.; Indiana University School of Medicine, Indianapolis, 1919; aged 39; died, July 13, in the Methodist Hospital, Indianapolis, of Hodgkin's disease.

William F. Sawhill ✠ Concordia, Kan.; Jefferson Medical College of Philadelphia, 1882; past president of the Kansas Medical Society; aged 77; died, May 23, of cerebral thrombosis.

William Baker Sisson, Kahoka, Mo.; Missouri Medical College, St. Louis, 1890; past president of the Clark County Medical Society; aged 73; died, June 24, of heart disease.

Charles H. S. Selinger, New York; Eclectic Medical College of the City of New York, 1905; served during the World War; aged 50; died, July 11, of poison, self-administered.

Samuel Tilden Gillispie, San Diego, Calif.; Rush Medical College, Chicago, 1900; member of the California Medical Association; aged 62; died, June 23, of coronary sclerosis.

Katherine Q. Holden Kromer, San Diego, Calif.; University of Michigan Medical School, Ann Arbor, 1889; aged 77; died, June 5, of diabetes mellitus and myocarditis.

John J. Sinnott, New York; University and Bellevue Hospital Medical College, 1899; aged 58; died, July 14, in the Portland (Pa.) Hospital, of cerebral hemorrhage.

Charles U. Hanna ✠ Zanesville, Ohio; Ohio Medical University, Columbus, 1895; on the staff of the Bethesda Hospital; aged 66; died, July 13, of angina pectoris.

Henry A. Schmidt, Milwaukee; Independent Medical College, Chicago, 1896; aged 68; died, July 14, of arteriosclerosis, chronic myocarditis and diabetes mellitus.

William Latane Lewis ✠ Kensington, Md.; University of Maryland School of Medicine, Baltimore, 1892; aged 73; died, July 12, of acute dilatation of the heart.

Francis Marion Laughlin, East Liverpool, Ohio; Western Reserve University Medical Department, Cleveland, 1881; aged 77; died, July 6, of chronic myocarditis.

Eva Furlow Collins, Cleveland; Homeopathic Hospital College, Cleveland, 1893; aged 70; died, July 8, of injuries received when struck by an automobile.

H. R. Ingram, Coleman, Ga.; Atlanta Medical College, 1895; member of the Medical Association of Georgia; aged 61; died, April 29, in a hospital at Cuthbert.

Eli T. Spencer, Los Angeles; Eclectic Medical Institute, Cincinnati, 1872; Civil War veteran; aged 85; died, June 27, of thrombosis of the coronary arteries.

Frank Raymond Dray ✠ San Francisco; Harvard University Medical School, Boston, 1898; aged 60; died, June 24, of coronary sclerosis and myocarditis.

Glenn H. Hardy, Canisteo, N. Y.; University of Buffalo School of Medicine, 1903; served during the World War; aged 58; died, July 12, of tabes dorsalis.

Emma Brooks Lewis, Santa Barbara, Calif.; Woman's Medical College of Pennsylvania, Philadelphia, 1874; aged 91; died, June 26, of pulmonary edema.

Florentine Peter Herman, Norwalk, Ohio; Eclectic Medical College, Cincinnati, 1922; served during the World War; aged 39; hanged himself, July 6.

Elliott W. Shipman ✠ Richmond Hill, N. Y.; University of Vermont College of Medicine, Burlington, 1885; aged 68; died, July 13, in Tolland, Mass.

Oscar Teeter, Amherstburg, Ont., Canada; University of Toronto Faculty of Medicine, 1891; formerly mayor of Amherstburg; aged 66; died, June 16.

Edwin Myron Weil, New York; College of Physicians and Surgeons, Baltimore, 1902; aged 62; died, July 12, of poison, self-administered.

Henry M. McHan, Fair Mount, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1901; aged 80; died, July 10, in Miami, Fla.

Granville Roy Norris, Burlington, Kan.; American Medical College, St. Louis, 1892; aged 66; died, May 31, of cerebral hemorrhage.

Christian P. Horn, Falls City, Ore.; National Homeopathic Medical College, Chicago, 1894; aged 70; died, July 5, of heart disease.

James B. Cox, Huntingdon, Tenn.; University of Tennessee Medical Department, 1878; aged 76; died, July 9, of arteriosclerosis.

Samuel Augusta Ellis, Tucson, Ariz.; College of Physicians and Surgeons of Chicago, 1886; aged 72; died, in May, of heart disease.

Raynor Woodhead ✠ Valley Falls, R. I.; Tufts College Medical School, Boston, 1898; aged 57; died, April 11, of heart disease.

Charles Wilson White, Birch Hills, Sask., Canada; Queen's University Faculty of Medicine, Kingston, Ont., 1922; aged 42; died, May 8.

William E. Lothridge ✠ Watervliet, N. Y.; Albany (N. Y.) Medical College, 1879; aged 78; died, July 10, of heart disease.

Joseph Howard Ogle, Garland, Texas; University of Tennessee Medical Department, Nashville, 1893; aged 72; died, June 20.

William McDowell, Anderson, Calif.; Cooper Medical College, San Francisco, 1901; aged 58; died, July 1, of carcinoma.

Horatio Seymour Joseph, Harlingen, Texas; Kentucky School of Medicine, Louisville, 1893; aged 65; died in June.

Clyde E. Sawyers, Centerville, Iowa; Rush Medical College, Chicago, 1894; aged 65; died, July 10, of myocarditis.

Edmund G. Thomas, Benton, Ky.; University of Louisville (Ky.) School of Medicine, 1873; aged 81; died, July 16.

Edwin Francis Lehman, Middletown, Pa.; Jefferson Medical College of Philadelphia, 1884; aged 69; died, June 4.

Leamington B. Stewart, Chesaning, Mich.; Toledo (Ohio) Medical College, 1884; aged 78; died, July 15.

Henry Clay Owen, Olathe, Kan.; Medical College of Ohio, Cincinnati, 1878; aged 88; died, June 7.

Jesse Crounse, Altamont, N. Y.; Albany Medical College, 1877; aged 81; died, June 29.

Bureau of Investigation

THE PLASTIC APPLIANCE INSTITUTE

Another "Nose Adjuster" Fraud Debarred from the Mails

During the past few years there have been advertised devices that the public has been led to believe could, by wearing, be made to change the shape of the adult nose. The Post Office Department has already declared two of these concerns fraudulent and now reports another in the same class—the Plastic Appliance Institute. According to a report by the Chicago Better Business Bureau made in March, 1932, the Plastic Appliance Institute was a partnership affair organized in October, 1931, by Mr. Paul L. Bieles and Mr. K. Trilling. From the advertising matter it appeared that Mr. Bieles was the president, while one "Daniel T. Gaylord" was secretary. Later information brought out the fact that Gaylord was a fictitious person whose name was chosen for its euphonious sound. The

Velvex—the Preparing Cream
Velvex, the preparing cream used in conjunction with the SCULPTRON to hasten its action, is made in accordance with a well-defined formula. A highly trained chemist and a well known cosmetician developed this formula for this specific use.
The SCULPTRON and Velvex Equipment COMPLETE cost only
$6.00
Before
After
Before
After
14

Photographic facsimile from a page of the Plastic Appliance Institute's booklet: "A New Nose at Little Cost."

alleged institute was started in Chicago, but left that city and reopened in Sheboygan, Wis., where it continued to do business through the United States mails.

The Bieles device was called a "Sculptron," and it was advertised under the claim that there were "no confusing head tapes"—although there were—and that it was "automatic" in its adjustment—although it wasn't. The device itself was an affair of aluminum and felt. There came with it, of course, the inevitable mystery element, a "preparing cream" which was called "Velvex." The device itself is said to have cost about 40 cents. It was sold at first for $6, the price being gradually lowered, as it became more difficult to find suckers, to $5, then to $4, and finally to $2. Advertising booklets were sent out which might lead the gullible to believe that with the use of the Sculptron one could change the nose of a "King Kong" into the nasal pulchritude of a Clark Gable. Pictures in the booklet showed men and women with noses that bore bony humps, said humps disappearing after the use of the Sculptron and giving place to perfect Grecian profiles. Ladies with rather elongated and overhanging proboscides were changed by Mr. Bieles' device—if the pictures were to be believed—into visions of loveliness, with the "tip-tilted" nose so well described by Tennyson in his "Idylls of the King." To quote from the booklet:

> "It makes no difference what shape the fleshy contour of your nose may be, the Sculptron is designed to make it just as beautiful and straight as you desire."

On another page of the booklet someone, presumably Mr. Bieles, is shown in the position of a go-getter haranguing a meeting of salesmen, and under the picture is the statement: "The Sculptron Principle Is Endorsed by Doctors." We then read:

> "Upon the rigid logic of rhinoplasticology (science of shaping the nose) are based the principles of the Sculptron.
> "Foremost members of the medical profession endorse these principles in highest terms.
> "The science of rhinoplastics is not in the experimental stage. It is firmly established, with a vast background of thrilling accomplishments."

There are testimonials, of course, one of the most remarkable being credited to a "Miss F. B., Memphis, Tenn.," who gushes her appreciation of the rapid work that the Sculptron will do in these words:

> "After the second night of wearing the Sculptron, I simply can't keep from writing you of how thrilled I am. At the present rate, I think I am going to have a perfect nose in less than a week. Isn't that marvelous?"

In due time the postal authorities got around to the Plastic Appliance Institute, and on May 10 a memorandum of charges was furnished Mr. Bieles, who was called on to show cause why a fraud order should not be issued against the concern of which he was president. There was a hearing at which Mr. Bieles and his attorney appeared. It consumed slightly over half a day. Following the noon recess, Mr. Bieles' attorney is reported to have stated that on the basis of the evidence adduced during the morning session, no further defense would be offered, and it would be stipulated on the record that a fraud order should be issued forthwith.

Mr. Karl A. Crowley, Solicitor for the Post Office Department, in his memorandum to the Postmaster-General recommending the issuance of a fraud order, brought out the fact that Mr. Bieles himself had admitted at the hearing that his device had been worn by Mrs. Bieles over a period of several months without producing any material or lasting change in the shape of her nose! It was further brought out that Bieles inaugurated his scheme after observing other enterprises of a similar character, particularly the one against which a fraud order had been issued by the postal authorities. Bieles himself was wholly without medical training.

Following the recommendation of Judge Crowley, Postmaster-General James A. Farley on June 8, 1933, issued a fraud order against the Plastic Appliance Institute and its officers and agents as such at Chicago, Ill., and Sheboygan, Wis.

Correspondence

USE OF A STANDARD CLASSIFIED NOMENCLATURE OF DISEASE

To the Editor:—Recently there has been published a new classified nomenclature of disease. This was prepared under the supervision of physicians representing practically all the national medical organizations of the United States, and so is both authoritative and generally acceptable. It is the last word in nomenclature. But why, it may be said, is there a need for a classified nomenclature of disease? What use is it?

Without some such book of nomenclature, a patient's disease may be recorded as one of several diagnoses. This brings confusion when an attempt is made to gather together from a personal or a hospital file a group of cases of the same disease, for one does not know where to look for all of them among the index cards. One member of the staff uses a given diagnosis, another a different one. The same patient returning for several admissions, always having the same disease, may be filed under different diagnoses, if there is not uniformity in

nomenclature. Statistics are difficult to gather under these conditions. Especially is this true when an attempt is made to compare statistics from different hospitals. The use of a generally accepted nomenclature of disease remedies all this.

When a physician has studied a patient, he wishes to express the results in terms of diagnoses. He knows what ails the patient but may not know the accepted names for the conditions found. A book of nomenclature aids greatly in selecting names that will be generally understood. Especially is such a book useful to those assigned the task of entering diagnoses on histories of discharged patients.

Almost every hospital uses some form of list of diagnoses, but up to now there has been no single one authoritative for the entire country. This is furnished by this new book of nomenclature of disease. It would be a distinct advantage to medicine if every hospital used the same nomenclature, as is made possible by this book.

The more widely such a book is used, the more useful it becomes. So all hospitals are being urged to adopt it. Its use is far simpler than at first glance one would think. It was adopted, February 1, at the Peter Bent Brigham Hospital, and soon its use was running smoothly and the house officers were having little difficulty in finding the proper diagnostic terms. Why not put it into use in every hospital? Those who want to find out about it may write to the National Conference on Nomenclature of Disease, 2 East One Hundred and Third Street, New York City.

HENRY A. CHRISTIAN, M.D.,
Peter Bent Brigham Hospital,
Boston.

[NOTE.—This book, "A Standard Classified Nomenclature of Disease," was officially approved by the House of Delegates of the American Medical Association. A review appeared in THE JOURNAL, May 27, page 1717.—ED.]

"FORCED DRAINAGE OF THE CEREBROSPINAL FLUID"

To the Editor:—In THE JOURNAL, July 29, an article by Drs. Kubie and Retan describes with meticulous detail the newest procedure for dealing with infections of the central nervous system. This in principle and effect is "lavage" of the perivascular and perineuronal spaces of the cerebrospinal parenchyma, which is induced by the introduction of large amounts of hypotonic salt solution into the circulation, and, as the result of differences in osmotic tension thus created, a large amount of this fluid ultimately finds its way into the ventriculosubarachnoid spaces of the brain and cord. It is then drained off through a lumbar interspace, with a lumbar puncture needle. The conception and execution of the therapeutic procedures is, as far as I am aware, original with the authors, and they deserve commendation for this notable contribution to the therapy of infections of the central nervous system.

I have had the opportunity to make use of forced drainage in a small number of cases, and I can well testify to the physiologic response and therapeutic efficacy of the procedure. I have not, however, followed the technical details so clearly outlined by the authors but have resorted to the simpler procedure of injecting into the vein a quart of hypotonic salt solution (0.45 per cent) and, after this is completed, lumbar puncture is done and all the fluid is drained away from the lumbar subarachnoid spaces. This is repeated every eight hours as a routine measure. I can confirm the marked increase in the amount of cerebrospinal fluid noted after the hypotonic injections have been started and the gradual change in the cytology of the fluid. This is a most striking phenomenon—particularly the ability to create artificially a large reservoir of cerebrospinal fluid which "washes" away purulent material and dilutes toxic débris and renders it harmless. It is more than probable that as a result of the use of this procedure the purulent exudates so common in infections of the central nervous system, which compromised important nerve structures, and which were with difficulty removed through a lumbar puncture needle, will no longer be seen.

My purpose in modifying the procedure of Drs. Kubie and Retan was to obviate the danger of infection of the soft tissues adjacent to the permanently placed lumbar puncture needle and the greater risk of infecting the spinal meninges. The method of injecting a massive dose of hypotonic saline solution intravenously, to be followed by thorough lumbar drainage, as one procedure, is simpler, just as effective, and can be carried out by the intern staff. I have seen no increase in symptoms nor other untoward phenomena as a result of this method of forced drainage.

My experience with this method has been limited to suppurative infections of the central nervous system, of both the meningococcic and the streptococcic variety. The former patients recovered and the latter succumbed. As a result of forced drainage, it was observed that the meningococcic patients recovered rapidly and that the streptococcic patients lasted a much longer time than has been the experience of most physicians.

CHARLES ROSENHECK, M.D., New York.

"MALARIA TRANSMITTED BY HYPODERMIC NEEDLE"

To the Editor:—The communication of Dr. Nathan Flaxman (THE JOURNAL, July 8, p. 157) appears to have been an attempt at refutation of the points I established in my communication (THE JOURNAL, June 10, p. 1882). My purpose was to furnish information based on fact, not to engage in polemics.

In my article I admitted and emphasized infectibility by needle but contended that the premises did not justify the conclusion. Dr. Nickum was mistaken in assuming that a person infected with Plasmodium vivax could be reinfected by a needle contaminated with the homologous strain. Furthermore, a three-day period of incubation of tertian malaria in his case is out of the question, since the pyretogenic minimum is accepted as being fifty parasites per cubic millimeter and the total volume of blood in an adult is around five million cubic millimeters. It is possible for a contaminative pyretogenic agent to have broken the patient's resistance to his own infection, if malaria was in evidence. But that is another story.

WILLIAM KRAUSS, M.D., Meridian, Miss.

ANEMIA IN KOREA

To the Editor:—In his article on anemias (THE JOURNAL, April 29, p. 1303), Ottenberg calls attention to the observation that has been made regarding the relationship of copper to the anemias. He also calls attention to the very minute quantities of copper required.

During a period of nine years' practice in Korea, the last three of which have been entirely in internal medicine in a hospital with an attendance of 50,000 patients yearly in the outpatient department, it has not been possible to make the diagnosis of pernicious anemia or sprue in a single instance. I do not wish to create the impression that pernicious anemia does not occur in Korea, but of more than 3,000 patients examined personally and in whom complete blood studies were made it has not been possible to confirm a diagnosis of pernicious anemia.

There are two other facts of at least passing interest in this connection. First, the Korean diet, in addition to rice, is made up largely of green leafy vegetables of various sorts and, when the Korean is able to secure meat, the liver, stomach, intestines, lungs and heart are considered the choice portions. For those who are ill, every effort is made to secure stomach, intestines

and liver. These are usually prepared and eaten whole. Second, practically all Korean food is served in brass dishes and eaten with brass spoons or chop-sticks. The use of brass is a matter of ancient custom and there is a definite idea among Koreans that the brass dish and spoon have a definite value in preserving health.

There is a striking parallel between the recent advances in the study of the anemias and the simple observations of ancient customs in Korea.

ZACHARIAS BERCOVITZ, M.D.,
Pyengyang Union Christian Hospital,
Pyengyang, Chosen (Korea).

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

VITAMINS IN VARIOUS COD LIVER OILS

To the Editor:—A number of my patients are finding it expensive to give cod liver oil to all their children. I have been attempting to compare the vitamin content of different oils. The difference in the D units makes this comparison difficult. New and Nonofficial Remedies has made the Steenbock unit more or less standard. Can you tell me the value of the following units in Steenbock units: (1) The McCollum, Simmonds, Shipley and Park. (2) Patch (Holmes) system. (3) Nason's oil. (4) American Drug Manufacturers Association. (5) The cod liver oil coefficient of Bills (Mead Company). Also can you tell me the specific gravity of average cod liver oil; of 250 D viosterol in oil, of haliver oil plain and with viosterol so that I can figure the vitamin content into liquid units as given to patients when it is stated in gram units? This is rather a big order but it will help to clear a confusing situation. One other question: According to Bills and his co-workers, in the *Journal of Biological Chemistry,* average cod liver oil has a vitamin D content of 40 Steenbock units.

HERBERT C. SOULE, M.D., Rochester, N. Y.

ANSWER.—One may sympathize with the correspondent in the difficulties that he is experiencing in his attempts to correlate the vitamin potency of different cod liver oil preparations, which are at present marketed with a considerable variety of unitage usages as well as differences in actual vitamin potency. In explanation of the situation, it should be recalled that knowledge of the nature of the antirachitic value of cod liver oil and other products containing vitamin D is of comparatively recent origin. It happens that investigators in many parts of the world have been engaged in the study of this unique property in the control of avitaminosis. Pioneers in various places have used different methods of estimation; as a consequence, the numerical values that have been reported in the literature and otherwise proclaimed are naturally confusing to all except expert students of the subject. On this account, there has been within recent times a concerted effort to adopt a universal system of unitage precisely as there have been efforts for many years to make the metric system of measurement universal in its application throughout the world. Through the initiative of a subcommittee of the Health Organization of the League of Nations, international "units" have finally been adopted. In this country, through the initiative of the Vitamin Standardization Committee of the United States Pharmacopeia XI, which is presently to be issued, an effort has been made to secure the adoption of these international units. Furthermore, under the same auspices, a movement is under way to prepare official standards in the form of analyzed cod liver oil that can be distributed to analysts everywhere at a reasonable price. These standard samples will be labeled with respect to their potency in vitamins D and A so that they can be used for comparisons by any individual or firm. We understand that they will be supplied, when ready, through Dr. E. Fullerton Cook, chairman of the Standardization Committee of the United States Pharmacopeia, Forty-Third Street and Woodland Avenue, Philadelphia. The date after which these standards will be available will be announced to the public in due season.

Meanwhile, it will be necessary for those interested to be tolerant with reference to the confusion. It is scarcely greater than that which is still encountered in medicine through the haphazard prescription of cubic centimeters, milliliters, drachms, ounces and grains.

Referring specifically to the inquiry:

1. We are not aware of any specific McCollum, Simmonds, Shipley and Park "unit" which can be translated into terms of other familiar units. The investigators referred to devised a technic—the so-called line test—for determining the degree of healing of experimental rickets under the influence of varying doses of antirachitic substances.

2. The Patch (Holmes) system has become obsolete. According to Bills, Honeywell, Wirick and Nusssmeier (*J. Biol. Chem.* **90**:619 [Feb.] 1931), 26,500 units of the Patch (Holmes) system are equal to 4,000 Steenbock units. Therefore 6.6 Patch (Holmes) system units are equal to 1 Steenbock unit. In New and Nonofficial Remedies, 1933, page 428, the Steenbock rat unit is defined "as the *total* amount of vitamin D necessary to produce a narrow and continuous line of calcium deposits in the metaphyses of the distal ends of the radii and ulnae of standard rachitic rats under standard feeding conditions." Viosterol in oil is standardized by comparison with a potent cod liver oil containing, in each 75 mg., 1 rat unit (Steenbock) of vitamin D. Each gram (1,000 mg.) of a potent cod liver oil therefore contains 1,000 ÷ 75, or 13.33 Steenbock units. The American Drug Manufacturers Association's rat unit (*J. Am. Pharm. A.* **21**:598 [June] 1932) is the minimum average *daily* amount in milligrams of cod liver oil required to produce the same kind and degree of healing as referred to in the definition of the Steenbock unit.

3. Nason's Palatable Cod Liver Oil, according to New and Nonofficial Remedies, 1933, page 273, has "an antirachitic potency of not less than 150 units per gram." The 150 units referred to are A. D. M. A. units, which are equivalent to 15 Steenbock units.

4. The American Drug Manufacturers Association's units have already been referred to in paragraph 2. Ten A. D. M. A. units are equal to one Steenbock unit.

5. According to Bills, Honeywell, Wirick and Nussmeier, a Cod Liver Oil Coefficient of 100 equals 4,000 Steenbock units of vitamin D per gram.

The specific gravity of the average cod liver oil is 0.92 The specific gravity of the other mentioned products—Viosterol in Oil 250 D, Haliver Oil Plain and with Viosterol—is approximately the same.

The statement of the correspondent that, "according to Bills and his co-workers, in the *Journal of Biological Chemistry,* average cod liver oil has a vitamin D content of 40 Steenbock units," has not been discovered. The potency of average cod liver oil is defined by Bills and his co-workers as that which induces a certain amount of healing (*J. Biol. Chem.* **90**:616, 1931); these authors do not express activity in unitage, in fact, they state that they "have refrained from expressing potency in terms of units per quantity of material (op. cit., p. 636).

As soon as the United States Pharmacopeia XI proposed new units have become official, it is to be presumed that they will be included in subsequent editions of New and Nonofficial Remedies and probably be introduced generally in the notations of the drug trade.

INDURATION OF CORPORA CAVERNOSA

To the Editor:—I have under observation a man, aged 57, who came to me with the complaint of finding a hard mass in the body of the penis. He complains that penile erection is painful because of the tendency of the erect penis to bend upward at the point where the mass is localized. There is no history of gonorrhea or syphilis. The mass is not painful and not tender. There is no interference with micturition. The urinary stream starts easily. There is no hematuria or pyuria and no frequency. The prostate is not enlarged. The mass is situated about one-half inch behind the corona of the glans and is very hard, sharply defined, about one-eighth inch thick by one-half inch square. It is located in the corpus spongiosum and is freely movable in that body. There is no inguinal glandular adenopathy. The patient became aware of his condition two months ago and since then has noticed no change in size or shape of the plaque. I have read somewhere of a penile condition wherein the corpus spongiosum becomes infiltrated with patches of fibrous tissue. I would appreciate the name of the condition, treatment and prognosis.

M.D., New York.

ANSWER.—This condition is rather uncommon and is known under various names, the most common of which are "fibrous cavernositis" or "induration of the corpora cavernosa." There is nothing dangerous about the condition and it has never been known to undergo malignant degeneration. It never interferes with urination, but its most serious aspect is that it causes a curvature of the penis during erection or in some other way mechanically interferes with complete erection and so is a serious bar to normal intercourse. The prognosis is bad and even if the growth is removed by surgical operation a recurrence is the rule. The condition must be and easily is differentiated from such condition as carcinoma, dorsal phlebitis, gouty tophi and gummas, for the latter of which a Wassermann test should be made. There have been various treatments suggested and once in a while a cure is brought about by any of these methods. Internally, large doses of arsenic, mercury and the iodides have been given with but indifferent success, though they may be given a trial before more strenuous methods are undertaken.

The same may be said of removing all sources of infection from the teeth, tonsils and prostate. Locally, massage, electrolysis, galvanization, ionization, radium and x-rays have been tried with little or no success. Local applications of pastes containing various drugs, such as iodine, mercury, camphor and iodoform, have also been discarded as of no avail. Surgical excision has given the greatest number of cures in expert hands, but even here the results are poor. Almost nothing is known of the cause of the condition and, as a rule, there is little tendency to extension after the growth has fully developed.

APHTHOUS STOMATITIS

To the Editor:—I realize how difficult it is to make a diagnosis when one actually sees the patient, much more so when the information in the case is second-hand. However, I wish your opinion on a case: A widow, aged 39, with four children living and one who died of pneumonia, has suffered with ulcers of the mouth for several years. When I first observed her, some five years ago, she had badly decayed teeth, beyond repair. I advised her to have the old snags removed and a new set made, and that I thought the ulcers would disappear. She complied with this advice and she still has ulcers. Her family history is negative and also her past history. She has always been healthy, except that some four years ago she had a slight erosion of the cervix, which cleared up under the electrical cautery. Repeated Wassermann tests have been negative, as is urinalysis. There is no history of indigestion and she usually does not suffer from constipation. Her husband died of organic heart disease about five years ago. Her throat is clean and she is particular about keeping her mouth and teeth clean, but at times her tongue is coated. These ulcers begin as little bumps and after a day or two the point of the bump sloughs off and the ulcer remains for from ten days to three weeks and then heals perfectly. She seldom has more than two ulcers at the same time and sometimes there are intervals of from three to six weeks that she is exempt from them. When the ulcer disappears, no scar is left. These ulcers occur on the tongue and any part of the mucous membrane of the mouth, except the roof of the mouth. I have prescribed alkalis, brewers' yeast and cod liver oil, and none do any good. If you could offer me a suggestion from this description I would appreciate it. Please omit name.

M.D., Florida.

ANSWER.—This description corresponds in all respects but one (anemia) with the "chronic recurrent aphthous stomatitis" of von Mikulicz (von Mikulicz and Kümmel: Krankheiten des Mundes, ed. 3, p. 71). The condition is quite rare and occurs as a rule in anemic women between 20 and 40 years of age. As this author says, "this condition is influenced neither by therapy directed at the anemia nor by any sort of local treatment." However, some temporary relief of the local conditions, especially the pain, may follow the use of the silver nitrate pencil applied superficially.

"TETRALOGY OF FALLOT"—MÖNCKEBERG'S DISEASE

To the Editor:—1. In a recent issue of the *New England Journal of Medicine* the statement was made that "the heart lesion was diagnosed as the tetralogy of Fallot." What is the tetralogy of Fallot? 2. How does Mönckeberg's disease differ pathologically and clinically from arteriosclerosis and from thrombo-angiitis obliterans? Please omit name.

M.D., Massachusetts.

ANSWER.—1. The tetralogy of Fallot is the most frequent combination of cardiac defects found in adults of the cyanosed group of patients suffering from congenital heart disease. It consists of the following four cardiac defects: stenosis of the pulmonary artery, interventricular septal defect, deviation of the origin of the aorta to the right, and hypertrophy of the right ventricle. These patients also show other clinical features of congenital heart disease, such as a compensatory polycythemia, increased amount of hemoglobin in the blood, clubbing of the fingers and toes and cyanosis. The pathogenesis of this combination of defects has been explained by Fallot and further elaborated by Maude Abbott as being secondary to the pulmonary stenosis allowing for a shunting of some of the blood through the heart to the systemic circulation.

2. There is still some difference of opinion regarding the subdivision of arteriosclerosis into Mönckeberg's sclerosis and atherosclerosis. Although pathologically the two types differ markedly, some authors consider that Mönckeberg's sclerosis and atherosclerosis are only different manifestations of the same process operating in different types of vessels. Mönckeberg's sclerosis is a medial sclerosis, which affects vessels with well developed muscular coats, such as the femoral, popliteal and radial, just above the wrist. This last type of sclerosis is responsible for the pipe stem radials and tortuous temporals but does not as a rule decrease the size of the lumen of the affected vessels unless there is a superimposed atherosclerosis of the intima. It occurs particularly in elderly persons and may be considered a senile degenerative change. Deposits of lime salts in the media form the principal feature and make the vessels hard and brittle. The deposits are patchy and may encircle the vessel so that it presents a series of rings, or they may fuse together to form a hard tube like the stem of a pipe. Histologically the muscle fibers show fatty changes, fragmentation and lime deposits.

On the other hand, atherosclerosis has been adopted to signify the ordinary nonsyphilitic decadent lesion of the intima, which occurs in the larger and smaller vessels or vessels with well developed intima. From this discussion it is seen that Mönckeberg's sclerosis is merely a form of arteriosclerosis that occurs in vessels with well developed muscular walls.

In further answer to the questions, Mönckeberg's sclerosis does not differ from arteriosclerosis, of which it is a part, though it does differ in certain respects from atherosclerosis. For more detailed discussion of this subject the reader is referred to "Diseases of the Arteries Including Angina Pectoris," by Sir Clifford Allbutt.

Regarding the difference between Mönckeberg's sclerosis and thrombo-angiitis obliterans, one can say that Mönckeberg's sclerosis is essentially an involvement of the media of certain vessels as a result of degenerative changes and does not in itself lead to occlusion, while thrombo-angiitis obliterans is chiefly an intimal involvement of the vessels of the legs and arms leading to occlusion. Further, the process is considered to be due to an infective process or to some unknown toxin.

Clinically, Mönckeberg's sclerosis differs from thrombo-angiitis obliterans in that the latter disease appears earlier in life, there is marked pain, and there is an obliterative process leading to gangrene. In Mönckeberg's sclerosis there may be a superimposed atherosclerosis of the intima, which may lead to gangrene such as seen in diabetic and senile gangrene.

POSSIBLE GERMAN MEASLES

To the Editor:—During the last two weeks I have been seeing many children with a maculopapular rash, which at first is discrete and rather blotchy in appearance and rapidly spreads over the body, becoming confluent in places. It usually begins on the extensor surfaces of the arms and about the neck but not on the face. Some children have a marked flushing of the face, with pallor about the mouth. The rash itself is a purple-pink. The children do not complain of illness, the temperature is normal or slightly above, sometimes the conjunctiva is injected, and occasionally there is a little redness of the throat; but none have complained of sore throat or coryza. The occipital and posterior cervical glands are not swollen. The rash clears up in from three to seven days. No desquamation has been noted. Some cases have been diagnosed as a rash due to sensitization to foods but it is distinctly contagious. I shall be thankful for any help you can give me in clearing up the diagnosis. Please omit name.

M.D. Indiana.

ANSWER.—It is impossible to state certainly what the condition described may be. The general picture strongly suggests German measles. Scarlet fever of a mild type could be excluded by an absence of hemolyzing streptococci in the throat. The absence of Koplik's spots is against measles. Mild cases of measles may be difficult to differentiate from cases of German measles, but in the former disease one expects more catarrhal symptoms at the onset. If the prevalent disease occurs in those who have previously had measles, the diagnosis of German measles is more certain. Dukes' or the fourth disease is of such questionable standing that it is not profitable to consider it in this connection.

MIRROR WRITING

To the Editor:—A school boy, aged 6 years, of excellent family, is normal in every way except for a visual abnormality. He visualizes everything exactly as a normal person would if looking in a mirror. Visual acuity is normal. For example, if shown the printed word Frank he would copy it, starting with the F and make it backward, starting on the right side of the paper. Also in copying pictures he will make them backward. What is the source, treatment and prognosis of this condition?

CHARLES T. GRATTIDGE, M.D., Laurelville, Ohio.

ANSWER.—This boy is undoubtedly what is known as a mirror writer. The knowledge of the source of this condition is entirely hypothetic at present but there are many factors which would lead one to believe that such a condition is due to a disturbance in the control centers of the brain as they influence laterality. The majority of these children are sinistrals in that the dominant eye is the left eye and the dominant arm and hand are of the left side. For some unknown reason, the interpretation of the word memory area in the brain does not entirely coincide with this laterality. Evidence has been brought forward to show that attempts to change the handedness of children who show preference for the left side causes great disturbance. Many of these children become stutterers; others are mirror writers.

Treatment consists in personally concentrated emphasis concerning the letters of the alphabet in their correct position and also in their relation to one another. The auditory memory center is an added adjunct in the training, in that the letters are repeated out loud.

The prognosis is excellent under proper tutelage. A detailed system of training has been outlined in the book "Children Who Cannot Read," by Marian Monroe, University of Chicago Press, 1932. Other references that may help in understanding this condition are:

Orton, S. T.: Specific Reading Disability—Strephosymbolia, THE JOURNAL, April 7, 1928, p. 1095.

Mayer, L. L.: Congenital Reading Disability—Strephosymbolia, THE JOURNAL, April 15, 1933, p. 1152.

POISONING WITH BARIUM CARBONATE

To the Editor:—A man, about 36 years of age, had a diagnosis of gastric ulcer about a year ago and entered a hospital, where he was given a Sippy diet and received treatment with powders. He had a gastric discomfort for months. October 22, 1932, he became ill shortly after taking some powders. He was seized with vomiting, there was paresthesia of both arms, and there were decreased generalized reflexes. There was no history or evidence of infection with Bacillus botulinus. The powder which he was supposed to have taken contained 10 grains of calcium carbonate and 30 grains of sodium bicarbonate and measured approximately one-half teaspoon. Subsequent examination of this powder revealed that it contained 21.51 per cent of barium carbonate, a poisonous salt. I might state that during the course of his attack he was confined to the hospital. A physician made a diagnosis of toxic angioneurotic edema. 1. What treatment should be given in such a type of case with a history of ingestion of barium carbonate of this concentration? 2. What is the probable length of disability? 3. Was the dose obtained in this powder sufficient to produce the symptoms of which the patient complained? 4. Will there be any permanent effect of the alleged poisoning? 5. Is there any danger of recurrence of the condition without taking the same type of drugs? 6. What symptoms might be expected with such a history? 7. What is the prognosis as to the eventual cure? 8. What was the dose of barium carbonate that the patient took, assuming that he was given half a teaspoonful of a powder supposed to contain 10 grains of calcium carbonate and 30 grains of sodium bicarbonate, but which in reality contained 21.51 per cent barium carbonate?

D. R. MCLEAN, M.D., Chicago.

ANSWER.—1. Probably the best chemical antidote is a soluble sulphate, as magnesium sulphate or sodium sulphate, to precipitate the insoluble barium sulphate. This should be followed by gastric lavage with milk and water. Heat should be applied to the body and the cardiac depression treated by stimulants as the symptoms arise. The abdominal pain and marked slowing of the pulse may require the administration of atropine.

2. The probable length of disability varies with the dose ingested.

3. The dose in this instance probably is sufficient to cause the symptoms.

4. There are apparently no permanent effects to be expected in this instance.

5. If the etiology of this patient's condition is correct, one can be assured of no recurrence without the intake of barium.

6. The symptoms of barium poisoning vary with the dose and include salivation, nausea, vomiting, severe epigastric pain and diarrhea. The patient is cold and the skin is cold. There may be severe cramps in the different groups of muscles, about one half of the cases showing convulsions and the other half paralysis, while general muscular weakness is common. The pulse in some cases is small and irregular and intermittent, while in others it shows a digitalis-like action and is slow and full. The blood pressure may be increased and the patient may complain of cardiac palpitation. There may be vertigo, ringing in the ears and disturbances of vision and speech. Collapse and death may come suddenly, associated with general convulsions and failure of respirations.

7. With the small dose ingested, cure should be complete.

8. Between 7 and 8½ grains.

ASCHHEIM-ZONDEK AND ALLEN-DOISY UNITS

To the Editor:—Please compare the relative potency of the Aschheim-Zondek mouse unit and the Allen-Doisy rat unit. Please omit name.

M.D., Kansas.

ANSWER.—The Aschheim-Zondek test and the Allen-Doisy assay do not measure the same thing and therefore they are not directly comparable. The Aschheim-Zondek mouse unit refers to the amount of "Prolan" (anterior pituitary-like factor) which can produce a definite reaction in the ovarian follicles. The Allen-Doisy rat unit determines the amount of estrogenic substance which can produce estrus in castrated rats. A number of workers have used mice for the Allen-Doisy assay; there is little agreement as to the relative values of the rat unit and the mouse unit of estrogenic substance (commercially: theelin, theelol, Amniotin, and so on). For the aqueous solutions the ratios in the literature vary from 10:1 to 2:1; generally four mouse units are taken as equal to one rat unit.

ALOPECIA AREATA

To the Editor:—A woman, aged 32 was operated on in 1927 for acute appendicitis, at which time no pathologic conditions were found in the pelvis. One month after the operation a bald spot appeared on the back of her head and by the end of the second month after operation she had a generalized and total alopecia involving all parts of her body. This condition has persisted to date. She has been seen by several physicians and following treatment a scanty amount of hair appeared on the head, which was transitory in appearance. Treatment by these physicians consisted of thyro-ovarian tablets, one three times a day, and later the use of a "patent medicine," an ointment called Anti-Pelaid. Some hair appeared on the head, which persisted while treatment continued but disappeared when this was stopped. In disappearing, it seemed to fall out by the roots. The patient has had regular periods with a moderate amount of flow, the periods lasting five days on an average. There has been a slight dysmenorrhea with the periods. There is no loss of sexual impulse, and on pelvic examination the female organs are apparently negative. The patient was pregnant once, in 1926, but this pregnancy terminated at four months as a miscarriage. The patient at present time is in apparent good health, is 5 feet 2 inches (157.5 cm.) in height, and weighs about 126 pounds (57 Kg.). The breasts are developed but small. She is a decided blonde, with a passive temperament, and is not nervous. She came to me requesting treatment for the generalized alopecia. She has had one roentgenogram taken in her life and has received no radium or ultraviolet treatments for this trouble. What in the way of treatment would be advisable? Is it possible to restore this woman's hair to her?

M.D., Washington.

ANSWER.—This is undoubtedly a case of alopecia areata which has become generalized. It is possible that hair may regrow even after so long an interval; but the probability is slight. Every effort should be made, however. The patient should be put on a high vitamin diet and in every way kept at the highest possible plane of health. If she wears a wig, it should be left off whenever possible. Ultraviolet exposures sufficient to cause a marked erythema should be given over limited portions of the scalp, to avoid the distress of a severe general actinic dermatitis. If a severe reaction occurs, it does no harm but is beneficial, and soothing applications may be made as required. As soon as the signs of dermatitis have disappeared, another treatment should be given. When the scalp has become so resistant to ultraviolet radiation that the length of exposures required for a reaction becomes burdensome, change should be made to alcoholic dilutions of cresolic acids, beginning with 30 per cent and increasing as necessary for a reaction. If this wears out, phenol diluted with glycerin, or chrysarobin may be used. The latter should be dissolved in chloroform, from 2 to 12 per cent, painted on the scalp and covered when dry with flexible collodion. Every precaution should be used against getting it on the face, particularly near the eyes. During the application of any of these chemicals it is advisable to watch the urine at weekly intervals for signs of kidney irritation.

If hair begins to grow, the treatment should be continued for some time thereafter. A basic metabolism test should be made and, if low, appropriate doses of thyroid extract should be given. Extract of the anterior lobe of the pituitary gland, given hypodermically over a long period, has been reported to aid regrowth of hair (Bengtson, B. N.: Pituitary Treatment of Alopecia, THE JOURNAL, Nov. 7, 1931, p. 1355).

USE OF HEXYLRESORCINOL AS ANTHELMINTIC

To the Editor:—In THE JOURNAL, July 23, 1932, there appeared an article on the use of hexylresorcinol as an anthelmintic. What dose was used by the authors, and over how long a period of time was it administered? Please omit name and address.

M.D., Colorado.

ANSWER.—A satisfactory dose is 0.1 Gm. for each year of age up to 1 Gm., which is sufficient for adults. With such single doses, 75 per cent of cures and at least a 90 per cent reduction in the egg count have been obtained in ascariasis. In hookworm infestation there is approximately 75 per cent reduction in egg count and a 40 to 50 per cent reduction in trichuriasis.

Almost all ascarids can be removed with single doses of hexylresorcinol if precautions are taken to see that it is given on an empty stomach and that food is not taken for four or five hours after treatment. These precautions are of more importance than larger or repeated doses. In very young children with a high worm burden, it may be well to repeat the dose of hexylresorcinol on the next day, as the small dose is entirely out of proportion to the number of worms present compared with the conditions found in adults. A purge is not necessary, but 15 Gm. of magnesium sulphate has been given to adults twenty-four hours after hexylresorcinol as a routine. Children have been given smaller doses.

Hexylresorcinol is not as effective against hookworm as against ascaris infestation. Only a few reports have been received from the treatment of infestation with Ancylostoma

duodenale, and some of these have shown less satisfactory results.

Excellent results have been obtained in pinworm infestations by a combined treatment of oral and rectal administration of hexylresorcinol. The following treatment is suggested in this condition: Treat twice a week in the morning as follows: (*a*) Omit breakfast; no food until noon. (*b*) Hexylresorcinol pills orally, early in the morning 0.1 Gm. for each year of age up to 10 years of age; maximum dose after this age, 1 Gm. Drink plenty of water. (*c*) Soapsuds enema and after its evacuation an enema of 1 part crystalline hexylresorcinol in 1,000 cc. of water; this enema to be given high and retained five minutes. (*d*) Bed sheets and underclothes to be boiled at least twice weekly to destroy eggs or worms passed on them. (*e*) Children's hands and nails should be rigidly inspected and cleaned after they have used the toilet.

Hexylresorcinol is of value in the treatment of these helminth infestations. It is theoretically a safe substance to take and has been found to be so in some thousands of infectious cases. It has now been given in more than 8,000 cases of helminth infestations with no reported case of any complications, except an occasional slight temporary gastric irritation. It can be given easily in crystalline form in hard, gelatin capsules or in sugar coated pills. As hexylresorcinol reacts with gelatin after a time, these capsules are not practical except for immediate use. The pills, however, are stable and effective. If administrations are left to the patients or the parents of children, it is found that the patients often chew up the capsules or pills and obtain a phenol "burn" of the mouth, which causes whitening of the mucous membrane, anesthesia of the tongue and loss of taste for several days. On account of this complication when hexylresorcinol is not properly administered, this substance has been withdrawn from the market by the manufacturers until a more suitable form of administration can be devised. Such "burns" are due to faulty administration and should not affect its proper use any more than local irritation from improperly injected intravenous substances should prohibit their use.

Following are references to articles on the subject:

Lamson, P. D.; Brown, H. W.; Robbins, B. H., and Ward, Charlotte B.: Field Treatments of Ascariasis, Ancylostomiasis and Trichuriasis with Hexylresorcinol, *Am. J. Hyg.* **13:** 803 (May) 1931.

Lamson, P. D.; Ward, Charlotte B., and Brown, H. W.: An Effective Ascaricide—Hexylresorcinol, *Proc. Soc. Exper. Biol. & Med.* **27:** 1017 (June) 1930.

Lamson, P. D.; Brown, H. W.; Ward, Charlotte B., and Robbins, B. H.: Hexylresorcinol in the Treatment of Hookworm Disease, *Proc. Soc. Exper. Biol. & Med.* **28:** 191 (Nov.) 1930.

Lamson, P. D.; Caldwell, E. L.; Brown, H. W., and Ward, Charlotte B.: Hexylresorcinol in the Treatment of Human Ascariasis, *Am. J. Hyg.* **13:** 568 (March) 1931; A Comparison of the Anthelmintic Properties of Hexylresorcinol and Heptylresorcinol, *ibid.* **15:** 306 (Jan.) 1932.

Brown, H. W.: The Treatment of Ascariasis and Trichuriasis with Hexylresorcinol Pills, *Am. J. Hyg.* **16:** 602 (Oct.) 1932.

Brown, H. W.: Treatment of Pinworm (Enterobius Vermicularis) Infestation with Hexylresorcinol, *Proc. Soc. Exper. Biol. & Med.* **30:** 221 (Nov.) 1932.

LONG CONTINUING CRAMPS OF LEGS

To the Editor:—A man, aged 60, a floriculturist, has had spasmodic cramps in the muscles of both legs since he was 10 years old, and now has them in the hamstring muscles. Nothing has ever given him any relief by way of treatment. I have never found anything on this subject in medical literature. Can you give me any information on this subject, including treatment? ALLEN HENRY WRIGHT, M.D., Northfield, Mass.

ANSWER.—It is difficult to determine what would cause cramps in the region described for a period of fifty years. It is scarcely likely that a patient could have tetany for this length of time without having cramps in the fingers. It might be worth while, however, to try calcium gluconate, 1.3 Gm. (20 grains) three times a day for a period of at least two weeks. If there is then relief, the trouble was probably due to low blood calcium.

BLOOD IN SCARLET FEVER

To the Editor:—What especial characteristics are there in the blood of a patient suffering from an attack of scarlet fever that enable one to make a differential diagnosis between this disease and any other acute septic condition of the throat; i. e., anything in the increase of white cell count or in the differential count? Please omit name.

M.D., South Dakota.

ANSWER.—In scarlet fever there is a leukocytosis, which begins before the appearance of the rash and usually results in a white cell count of 10,000 or over because of increase in the polymorphonuclear cells. The differential count characteristically shows a gradual increase in the number of eosinophils, which continues after the acute stage of the fever is passed and into convalescence. The eosinophils may compose 10 per cent or more of leukocytes.

PREPARATION OF POLLENS WITH COCA'S SOLUTION

To the Editor:—Please send me the formula for Coca's solution used in diluting hay fever pollens. D. P. JONES, M.D., Plainview, Texas.

ANSWER.—Coca in his book "Asthma and Hay Fever," published by C. C. Thomas in 1931, introduced several different formulas for extracting and diluting antigens. The following extracting fluid is satisfactory for pollens, as there is relatively slight deterioration of the excitant in this fluid. The fluid just referred to is called the "alkaline" extracting fluid. Its composition is as follows:

Sodium chloride	0.5	per cent
Sodium bicarbonate	0.275	per cent
Phenol	0.4	per cent

Coca stresses the importance of carbon dioxide being passed through this fluid until phenolphthalein added to a sample of it remains colorless. It is kept in tightly stoppered bottles. Some men dispense with the carbon dioxide.

In a liter volumetric flask, 5 Gm. of sodium chloride, 2.75 Gm. of sodium bicarbonate and 4 Gm. of phenol are placed and the flask is filled to the mark with distilled water. The mixture is sterilized by running through a Berkefeld or Seitz filter.

To test for sterility, three cultures are made, a dextrose agar stab, slant and broth, incubated for three days.

POISONING WITH IODINE

To the Editor:—A man, aged 21, in good health, took about 1½ ounces of an old concentrated tincture of iodine. He vomited shortly afterward and also following the administration of starch and soda solutions. Sodium thiosulphate was given intravenously. Twelve hours later there was a chill followed by persistent high fever (104 F.). There was an acute cardiac failure on the second day, with pulmonary edema. The patient died on the ninth day with cerebral poisoning. What is the usual course of iodine poisoning? Could any of the complications be attributed directly to systemic action of iodine or to the burns produced?

J. R. DIXON, M.D., Linneus, Mo.

ANSWER.—The patient's symptoms were not typical. Usually, in poisoning from ingestion of tincture of iodine, gastrointestinal symptoms predominate with vomiting, violent abdominal pains and diarrheic stools, which are sometimes bloody. Hemorrhagic nephritis may develop. Collapse, with feeble pulse, on the first day, sometimes postponed until the second day, as in this case, is a part of the usual picture. The chill and fever and the final "cerebral poisoning" were probably consecutive symptoms to the tissue changes; the latter was possibly uremic.

BOOKS ON TOXICOLOGY

To the Editor:—Will you please give me the name of the best brief yet comprehensive reference book on toxicology, including all the latest approved antidotes. I would not wish it too voluminous as I wish it for emergency requirements when needed.

FRANK E. JUDGE, R.Ph., Minneapolis.

ANSWER.—Murrell's "What to Do in Cases of Poisoning," edition 13, revised by Hamill, New York, Paul B. Hoeber, Inc., 1925, is a pocket size book. "A Manual of Toxicology" by Albert H. Brundage, published by D. Appleton & Co., 1929, is considerably larger. The most recent, and possibly best, but in German, is "Die wichtigsten Vergiftungen," by Erich Leschke, Munich, J. F. Lehmann, 1933.

INTRODUCTION OF MYDRIATICS IN OPHTHALMOLOGY

To the Editor:—Have you any information on how, why and where mydriatics came in use in eye work—a historical review of them—especially atropine and homatropine, with the others on the side as they came into use and all these by whom and when? I am interested in this as well as in the various technics and ideas used by the different men. Please omit name.

M.D., Massachuetts.

ANSWER.—The correspondent is recommended to consult the Graefe-Saemisch Handbuch der gesamten Augenheilkunde (ed. 11, vol. IV, second division, chapter III, p. 55, Mydriatica und Miotica, by Professor Snellen) or the Kurzes Handbuch der Ophthalmologie of Schieck and Brückner (vol. VII, p. 611, Die Pupillenerweiternden Mittel by Professor Frey). The effect of atropine on the pupil was first described by van Swieten in 1771 and its effect on accommodation by Wells in 1811. The other mydriatics (together with a brief history of their discovery) are described in the works mentioned. The method of employment is discussed at length in Ocular Therapeutics, by S. R. Gifford (1931) as well as in the various textbooks on refraction.

HEREDITY OF DIABETES AMONG INDIANS

To the Editor:—The medical men having to do with practice among the American Indians throughout this section (southern California) feel that there is an unusually high percentage of patients who have sugar in the urine. No comprehensive figures have been found concerning this. There has been surprisingly little coma or gangrene. I have it in mind to check by routine a large number of urines of patients appearing in the outclinic (or office) and checking these with sugar with a second urine and blood sugar. What other data should I ascertain in attempting to find out something conclusive about the incidence of diabetes mellitus among these people?

JAMES E. JONES, M.D., Pala, Calif.

ANSWER.—Data should be obtained that will allow classification according to sex, age, weight and height and also the previous maximum weight. Urines of patients should be examined and recorded in relation to meals. So far as possible the specimens should be secured one hour after eating, and tested at once, so that, if sugar shows in any specimen, the blood can be taken immediately for a blood sugar test. Information bearing on heredity would be valuable, but probably inadequate save as it relates to contemporaries. Dextrose tolerance tests would help to clarify doubtful cases.

DETERMINATION OF RACE OF FATHER BY BLOOD TEST

To the Editor:—In my practice last year I had a labor case in which the white girl was not married and had been in the state hospital for the insane at one time. She could not, or would not, give the name of the father. Her father and brother laid it to a young white man in the community. The baby is of dark complexion and the scrotum was very dark at the time of birth. The question arises: Is the father of the child white or black? There is to be a lawsuit. I have been unable to find anything definite in medicolegal books at my command. Can you give me anything that would be of aid in determining whether the child is of a white father or of a Negro father? That will be the main thing to determine in the trial. Anything you can give me from your library or knowledge will be appreciated. Any suggestion as to what is the best thing to do in the case will also be appreciated. Please omit name.

M.D., South Carolina.

ANSWER.—It is not possible to determine by any known blood test whether a parent of a given child is of a white or colored race. The physical characteristics of the child as mentioned in the question do not of necessity point to a colored father. Should the question narrow itself to whether a given man, white or colored, is the father, the determination of the blood groups of the child and the suspected man would show that the man might be the father or that he is not the father. Let it be noted well that there are no tests by means of which one can determine that a given man is the father of a given child. What is the best thing to do in cases like the one in question? Generally speaking, the best thing to do is to respect absolutely the limitations of our knowledge and to refrain from speculations.

MILK AND MOLASSES ENEMA

To the Editor:—Could you tell me who originated or popularized the well known "milk and molasses" enema? Please omit name.

M.D., Illinois.

ANSWER.—A somewhat limited search of the literature has failed to reveal data to answer this question. Hippocrates—though probably he did not originate them—recommended enemas of honey, sweet wine and olive oil with a little "nitron," possibly soda. As the olive oil was no doubt emulsified by means of the soda, this includes essentially the same ingredients as the "milk and molasses" enema: a concentrated sugar solution mixed with an emulsion, producing the same effect.

FACIAL SPASM

To the Editor:—An American woman, aged 62, came to see me last week with the following complaint: Three years ago, just after the shock of her husband's sudden death, she began to have visible twitchings in the outer corner of the left eye. It has gradually spread to the corner of her mouth and as far out as the outer angle of the left mandible. At times it draws up the corner of her mouth. It is not painful but is very uncomfortable and is present some time during every day and night. Physical examination shows everything normal. Will you kindly advise me as to treatment and diagnosis? Please omit name.

M.D., Michigan.

ANSWER.—This appears to be a case of so-called essential or true facial spasm, since the muscles involved apparently are those innervated by the facial nerve of one side. It must be differentiated from habit spasm or tic, which would involve muscles from different nerve supplies and not be likely to remain unilateral and circumscribed for three years. Drugs have little effect unless given in undesirably large doses. The spasm can be arrested by injection of not over 40 per cent alcohol in the facial nerve at the stylomastoid foramen. This is not easy without practice and causes at first total or partial facial paralysis. After this has subsided in a few weeks or months, the spasm may not reappear for a long time. A surgical procedure was proposed last year by Sir Charles Ballance but would hardly be considered in a case as mild as the one here described.

ELECTRICAL SHOCK AND STERILITY

To the Editor:—A white man, now 27 years old, while working on an electric car in a sand and gravel pit three years ago, was rendered unconscious by an electrical shock. His clothes were sweaty; consequently, the short circuit from the electric car had good contact. He was knocked unconscious for eighteen hours. The question arises, Would such an individual be rendered sterile? The man has been married for three years without having produced any children. I should appreciate your opinion or any references. Please omit name.

M.D., Ohio.

ANSWER.—The first thing to be done is to examine a condom specimen for spermatozoa, and if live spermatozoa in sufficient numbers are found there is no question that the accident had no effect on his testicles. If, however, no spermatozoa are found and there is no obvious pathologic condition present to account for the azoospermia, the possibility of an injury to the pituitary lobe, especially the anterior portion of it, might be considered and the patient should be examined by an expert neurologist for other symptoms of pituitary dysfunction. Ordinarily, such an accident as the one mentioned has no effect in producing sterility.

ORAL ADMINISTRATION OF METHYLTHIONINE CHLORIDE (METHYLENE BLUE) NOT ADVISABLE FOR CYANIDE POISONING

To the Editor:—Geiger has shown quite definitely the value of the intravenous injection of methylene blue in the cases of cyanide or carbon monoxide poisoning. What effect may be expected of giving the methylene blue by mouth if intravenous medication is not at hand? Please omit name.

M.D., California.

ANSWER.—Oral administration of methylene blue as an emergency treatment of poisoning from cyanide or carbon monoxide would be too slow in action to do any good. Methylene blue when taken by mouth is absorbed probably too slowly to be effective. Presumably the effect, which must be immediate, demands that it be placed directly in the blood stream.

CROWE'S VACCINE FOR CHRONIC RHEUMATIC DISEASE

To the Editor:—Can you tell me whether the Crowe vaccine for chronic rheumatic diseases can be purchased in the United States? I have reference to the vaccine used by Dr. H. Warren Crowe of London, England. Please omit name.

M.D., Illinois.

ANSWER.—It is probably impossible to obtain Crowe's vaccine in America. Dr. H. Warren Crowe may be addressed at 15 Portland Place, W. I., London, England.

ISO-AGGLUTINATION

To the Editor:—Would you be kind enough to give me some help with blood typing and cross-agglutination. In several cases within the past year, blood belonging to the same group would not cross-agglutinate properly, agglutination occurring in the major side but never on the minor. I realize that there are several subgroups in group II but some of these have been in group IV (Moss). Most of the patients have been pregnant women, either before or after delivery, who have had a severe hemorrhage. One patient had pernicious anemia with a hemoglobin of 12 per cent (this patient had a transfusion with such blood with no untoward results). 1. Is there some change in the agglutinating properties of blood of pregnant women? 2. Has severe hemorrhage or anemia an effect on it? 3. Would it be safe to transfuse such blood? Please omit name.

M.D., Canada.

ANSWER.—1 and 2. So far as is known, there is no fundamental change in the iso-agglutinative properties of the blood in pregnancy, anemia or following severe hemorrhage.

3. Assuming that "such blood" means blood in pregnancy or other conditions of health, there would be no objection to its use for transfusion under proper circumstances.

PREPARATION FOR LOOSENING LINING MEMBRANE OF SINUSES

To the Editor:—Please furnish me the formula used to loosen the lining membrane of the frontal and maxillary sinuses in radical operations. I have seen this formula in one of the special journals but I am unable to find it. Please omit name.

M.D., Ohio.

ANSWER.—A solution that gives satisfactory results is made of trinitrophenol 5, acetone 35 and water 60 per cent.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

ALASKA: Juneau, Sept. 5. Sec., Dr. Harry C. DeVighne, Juneau.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written.* Boston, Chicago, Cleveland, New York, Philadelphia, St. Louis and San Francisco, Oct. 28. *Oral.* New York, Dec. 15-16. Application must be filed before Sept. 1. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: The examinations will be held in various cities of the United States and Canada, Dec. 9. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OTOLARYNGOLOGY: Boston, Sept. 16. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

COLORADO: Denver, Oct. 3. Sec., Dr. Wm. Whitridge Williams, 422 State Office Bldg., Denver.

IDAHO: Boise, Oct. 3. Dir., Mr. F. L. Cruikshank, Boise.

IOWA: Des Moines, Sept. 12-14. Dir., Mr. H. W. Grefe, Capitol Bldg., Des Moines.

MINNESOTA: *Basic Science.* Minneapolis, Oct. 3-4. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis.

MONTANA: Helena, Oct. 3. Sec., Dr. S. A. Cooney, 7 W. 6th Ave., Helena.

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II.* The examinations will be held at centers where there are five or more candidates, Sept. 13-15. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

NEBRASKA: *Basic Science.* Lincoln, Oct. 3-4. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEW HAMPSHIRE: Concord, Sept. 14-15. Sec., Dr. Charles Duncan, State House, Concord.

NEW YORK: Albany, Buffalo, New York and Syracuse, Sept. 25-28. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, Room 315 Education Bldg., Albany.

OKLAHOMA: Oklahoma City, Sept. 12-13. Sec., Dr. J. M. Byrum, Mammoth Bldg., Shawnee.

PUERTO RICO: San Juan, Sept. 5. Sec., Dr. O. Costa Mandry, Box 536, San Juan.

WISCONSIN: *Basic Science.* Madison, Sept. 23. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.

Kentucky June Report

Dr. A. T. McCormack, secretary, State Board of Health of Kentucky, reports the written examination held in Louisville, June 7-9, 1933. The examination covered 11 subjects and included 110 questions. An average of 70 per cent was required to pass. Sixty-five candidates were examined, all of whom passed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
University of Louisville School of Medicine		(1932)	79, 85, 87, (1933) 77, 79, 79, 80, 80, 80, 80, 80, 80, 81, 81, 81, 81, 81, 82, 82, 82, 82, 82, 82, 83, 83, 83, 83, 83, 83, 83, 83, 83, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 85, 85, 85, 85, 85, 86, 86, 86, 86, 87, 89
Harvard University Medical School		(1933)	85
University of Michigan Medical School		(1933)	83, 85
University of Cincinnati College of Medicine		(1933)	84*
University of Pennsylvania School of Medicine		(1933)	83
Vanderbilt University School of Medicine		(1933)	83

Twelve physicians were licensed by reciprocity with other states from June 19 to July 27. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas School of Medicine		(1933)	Arkansas
Howard University College of Medicine		(1930)	Penna.
University of Georgia Medical Department		(1927)	Georgia
Rush Medical College		(1932)	Illinois
University of Michigan Medical School		(1929)	Michigan
University of Nebraska College of Medicine		(1919)	Oklahoma
Meharry Medical College		(1930)	Tennessee
University of Tennessee College of Medicine		(1916)	Mississippi, (1930) Tennessee
Vanderbilt University School of Medicine		(1931)	Tennessee
University of Texas School of Medicine		(1925)	Texas
Medical College of Virginia		(1930)	Virginia

*This applicant has received an M.B. degree and will receive an M.D. degree on completion of internship.

Oklahoma June Report

Dr. J. M. Byrum, secretary, Oklahoma Board of Medical Examiners, reports the written examination held in Oklahoma City, June 7-8, 1933. The examination covered 12 subjects and included 120 questions. An average of 75 per cent was required to pass. Fifty-nine candidates were examined, all of whom passed. Six physicians were licensed by reciprocity with other states. The following colleges were represented:

College	PASSED	Year Grad.	Number Passed
Northwestern University Medical School		(1932)	1
Washington University School of Medicine		(1931)	1
University of Oklahoma School of Medicine		(1933, 55)*	55
Creighton University School of Medicine		(1933)*	1
University of Wisconsin Medical School		(1932)	1

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of California Medical School		(1928)	California
Rush Medical College		(1931)	Michigan
University of Minnesota Medical School		(1926)	Minnesota
Western Reserve University School of Medicine		(1925)	Ohio
University of Tennessee College of Medicine		(1932)	Tennessee
Baylor University College of Medicine		(1932)	Texas

*Licenses withheld pending completion of internship.

Book Notices

The Physiological Effects of Radiant Energy. By Henry Laurens, Ph.D., Professor of Physiology in the Tulane University School of Medicine, New Orleans, Louisiana. American Chemical Society Monograph Series. Cloth. Price, $6. Pp. 610, with 104 illustrations. New York: Chemical Catalog Company, Inc., 1933.

This is a noteworthy addition to the excellent volumes known as the American Chemical Society Monograph Series. During the past quarter of a century a number of researches concerning the physical and biologic properties of radiant energy, as well as therapeutic applications of ultraviolet radiations (quartz mercury lamps and carbon arcs), in particular, have appeared in a variety of publications both in this country and abroad. Recent treatises on "light biology" or "photobiology" (such as those by Pincussen and Plotnikow) have appeared in German and have not been translated into English. Laurens has rendered a distinct service to that portion of the English-reading scientific world interested in the physical, physiologic and therapeutic properties of radiant energy, for he has covered this important field in encyclopedic fashion. The book will be welcomed by physiologists, biophysicists and biochemists, since it gives in outline, but with sufficient detail, the results of the trends of investigation that have to do wih radiant energy, vitamin D, calcium and phosphorus assimilation, antirachitic activation and similar topics. The volume will be of value to the practicing physician, for the conclusions or suggestive leads that are derived from fundamental researches on the relationships between light and growth of animals and plants are carried over into clinical applications of radiant energy to diseases of the skin, blood, bone, parathyroid glands and lungs. Professor Laurens says: "The real triumphs of solar and artificial radiation, prophylactic and curative, are seen in rickets and extrapulmonary tuberculosis. . . . These results have been so clear cut in a large number of cases that there is no doubt about them. A knowledge of the biological effects of radiant energy and their clinical applications is now essential to the practitioner of medicine."

Clinique médicale des enfants: Maladies infectieuses. Deuxième série: Rougeole, scarlatine, coqueluche, pneumococcies, streptococcies, purpura infectieux, méningites à méningocoques, à bacilles de Pfeiffer, maladie de Heine-Médin, paludisme. Par P. Nobécourt, professeur de clinique médicale des enfants à la Faculté de médecine de Paris. Paper. Price, 60 francs. Pp. 430, with 139 illustrations. Paris: Masson & Cie, 1933.

This volume contains a second series of lectures on the infectious diseases. The lectures in the first series considered acute articular rheumatism, typhoid, paratyphoid and scarlet fever. The author starts with a discussion of measles. Two chapters are devoted to the statistical and clinical study of the disease in the first year of life. Following are chapters on the most important complications of measles. In young children the seriousness of measles is largely due to complicating respiratory conditions. The author lays particular stress on acute pulmonary edema and capillary bronchitis because of the rapidity of their onset and the intensity of the pathologic changes. Simple bronchopneumonia and tuberculous bronchopneumonia in the course of measles are also considered in detail, as are the difficulties in differential diagnosis. Besides standard diagnostic measures, the author advises the seroflocculation test of Vernes and the complement fixation of Besredka in attempting the differentiation. The complication of scarlet fever during the course of or following measles is next considered. The author stresses the fact that the majority of cases are seen in hospitalized children. Septicemia due to various organisms is discussed. The point is emphasized that in the presence of grave and moderately severe infection this diagnosis should be more frequently entertained.

Two lectures are devoted to pneumococcic infections and the varied clinical manifestations that may be seen in children. The discussion on erysipelas is almost limited to a consideration during the first three months of life. The point is made that erysipelas in infants up to the age of three months behaves in the same manner whatever its localization may be. The fact that the clinical manifestations of erysipelas vary before and after three months is cited as an example of the different paths which infectious diseases take in different periods of infancy. Agranulocytosis and infectious purpuras are discussed. The author believes that agranulocytosis is due to a latent medullary insufficiency brought to light by the occurrence of an infection. The various forms of meningitis and poliomyelitis are considered in detail. The lectures are concluded with a presentation of two children who contracted malaria from transfusion. The author points out the necessity of carefully examining and selecting donors for transfusion. The lectures are a valuable contribution to the comprehensive study of contagious diseases in children. The material presented presumes some clinical experience in infectious diseases, as the author does not attempt to give a complete discussion of each disease. He merely stresses such points as will clarify diagnosis and treatment. The data are largely the product of careful observation by a clinician who has a broad knowledge of medicine. This book is highly recommended to any one interested in acquiring a point of view which is not presented in the average textbook.

Handbook of Therapy. By Oliver T. Osborne, M.D., and Morris Fishbein, M.D., Editor, Journal American Medical Association. Ninth edition. Cloth. Price, $2.50. Pp. 687. Chicago: American Medical Association, 1933.

Medical progress in all fields is such as to make the revising of books on therapy a necessity at fairly frequent intervals. The practitioner is especially interested in this field because a great deal of his success depends on the application of the newer methods. The usefulness of this book is enhanced on each revision by the inclusion of the latest reports in the treatment of disease and the elimination of methods that have been tried and found wanting. Thus, in the treatment of ulcer is found a discussion of the use of mucin. The latest reports concerning the use of serum in infantile paralysis, or poliomyelitis, are found in the chapter on this disease. Prescription writing, the treatment of poisoning, and the listing of useful drugs are presented in the early chapters. Then follow infectious diseases, disorders of the respiratory, gastro-intestinal and urinary tracts, diseases of metabolism, heart disorders, disturbances of the blood and blood-making organs, the thyroid, nervous system, skin disorders, diseases of the eyes and ears, and the treatment of acute intoxications. The modern methods of treatment are given in detail. The practitioner should find this book of inestimable value at all times. By referring to its pages, he will find outlined modern methods of treating disease in a form that is easily understood and easily applied.

Monographies oto-rhino-laryngologiques internationales. Publiées par M. Vernet, L. Ledoux, G. Portmann, H. Aloin et M. Sourdille. No. 24: Les hémorragies en oto-rhino-laryngologie. Par Henri Aloin et Robert Noël, professeur agrégé d'histologie à la Faculté de médecine de Lyon. (Analyses en Allemand, Anglais, Espagnol, Italien). Paper. Price, 35 francs. Pp. 227, with 9 illustrations. Paris: Les Presses Universitaires de France, 1932.

This brochure deals in a fairly concise manner with one of the dreaded phenomena that may occur in various forms of disease of the ear, nose and throat, and especially with or following operative procedures. Sebileau is quoted to the effect that "there is no operation, however slight, that even in the hands of the most cautious and skilful surgeon may not prove fatal." In this little monograph, the physiology and histology of the blood are discussed, as well as the theories regarding coagulation. The author mentions briefly the various conditions in which spontaneous hemorrhage may occur as well as those in which there is some delay in clotting time. The medical treatment of diseases such as hemophilia, with injection of serum, is discussed. Considerable detail is given to the treatment of operative or postoperative bleeding, the ligation of vessels, and the transfusion of blood. The latter is thoroughly discussed, and the study of the compatibility of donors is emphasized. The various methods described are well known, but this is a subject that is welcome for all who do operative work in otolaryngology. An aid to the value of this little work is the summary given in German, English, Spanish and Italian. Not only does this widen its sphere from the reading standpoint but it really acts as an aid to those who have only a slight knowledge of the various languages, for by comparing the various texts one can easily learn the equivalents of many commonly used words. This work therefore fulfils several purposes.

The Science and Practice of Surgery. By W. H. C. Romanis, M.A., M.B., M.Ch., Surgeon and Lecturer on Surgery, St. Thomas's Hospital, and Philip H. Mitchiner, M.D., M.S., F.R.C.S., Hon. Surgeon to H. M. The King. Volume I: General Surgery. Volume II: Regional Surgery. Fourth edition. Cloth. Price, $12 per set. Pp. 791; 971, with 752 illustrations. Philadelphia: Lea & Febiger, 1933.

This revision of Romanis and Mitchener's valuable textbook of surgery attempts, as did the earlier editions, to present an integral and yet complete description of the field of surgery. The authors have accented the scientific background of each group of surgical entities, as is shown in the individual sections on surgical pathology and anatomy. The problems of differential diagnosis and treatment, which are of paramount importance to both the student and the general practitioner, are adequately dealt with. Because of the discreet mention of methods that are now obsolete, the new edition is hardly more than twenty-five pages longer than its predecessor. The chapters on diseases of the ear, nose and throat, and those on radiology, radium treatment, anesthesia and fractures and dislocations have been rewritten to conform with modern advances. Recent progress has been incorporated into the sections on blood transfusion, the sympathetic nervous system, cerebral surgery, bone diseases in relation to the parathyroid gland, carcinoma of the rectum and diseases of the spleen. The sections on peritonitis, varicose veins and burns and scalds also contain full and detailed accounts of modern treatment. The index has been amplified and carefully revised. The problem of postsurgical treatment, which has assumed considerable stature in this era of constant refinement, is properly considered. The book has the combined virtues of brevity and adequacy and is compact and well organized. The late developments in the fields of biologic chemistry and laboratory examination, which are now so frequently influencing modern medicine and surgery, are described when their importance warrants mention. The book consists of two volumes, one dealing with general surgery and the other with regional surgery. The volume on regional surgery contains sections on the specialties of medicine and surgical operative conditions. This work should be of value to both the student of medicine and to the man who practices general medicine.

Chirurgie de la main: Plaies, infections et chirurgie réparatrice. Par Marc Iselin. Préface du Pr Lenormant. Paper. Price, 55 francs. Pp. 339, with 111 illustrations. Paris: Masson & Cie, 1933.

This monograph is of especial interest to American readers both because it reflects the constantly increasing importance with which the conservative and reparative surgery of the hand is regarded in other countries as well as in our own and because of the author's grateful acknowledgment of his indebtedness to two prominent American surgeons, Kanavel of Chicago and Bunnell of San Francisco. The book is divided into three parts: the first, devoted to injuries; the second, to infection, and the third, to reconstructive surgery. The section on injuries is based on the author's experience with lacerated and crushing wounds, involving both the soft tissues and bones and joints, and covers the subject adequately. In the second section, on infections, the author takes issue with Kanavel on some points regarding the surgical anatomy of the hand and the method of choice of draining infections of the tendon sheaths. He states that the most important fascial spaces of the hand, from a surgical point of view, are the superficial and deep middle palmar spaces. By means of barium injections followed by radiographic examinations he has demonstrated these spaces to his satisfaction and believes that infections of the tendon sheaths of the index finger, as well as those of the middle and ring finger, rupture into the deep middle palmar space and not into the thenar space. It would perhaps have been wiser to state that in some cases pus rupturing from the tendon sheath of the index finger passes into the middle palmar space, for both Kanavel's careful experiments and an abundance of clinical cases are on record to show that

the common route of extension of pus rupturing from the tendon sheath of the index finger is into the thenar space.

Instead of draining an infected digital sheath widely by an incision at one side of the affected finger, he recommends a palmar incision at each side of the proximal end of the affected sheath and two corresponding incisions on the dorsum of the hand, with drains extending from each palmar incision through the palm to the corresponding incision on the dorsum. If this drainage of the "superior culdesac" does not suffice, he recommends subsequently an incision on one side of the finger, with division of the fibrous flexor sheath opposite the proximal phalanx. It is difficult for the reader who has followed Kanavel's teachings and observations to find a logical justification for a dorsal incision in cases of infection of the digital tendon sheaths, or for through and through drainage from the palm to the dorsum of the hand. It would seem wiser to hold to the author's second method, which in a more extended form has so long and so successfully been used by Kanavel and many others in the treatment of such infections.

The author's description of the superficial middle palmar space and other fascial spaces seems unduly confusing and complicated. If the surgeon keeps in mind the relatively simple facts concerning the position and attachments of the palmar aponeurosis he should not find it difficult to drain adequately infections of the fascial spaces of the palm.

Much of the section on reparative surgery is devoted to the subject of reconstruction of the flexor tendon, and this difficult procedure is well described. The illustrations of the author's method of introducing a tendon graft into a finger give the impression that this is a simple and easy thing to do. The surgeon who has transplanted flexor tendons into the fingers, whether to replace tendons destroyed as a result of infection or "frozen" in the sheaths as a result of an unsuccessful tendon suture, will find it difficult to believe that "catheterization" of the tendon sheath with a metal probe can actually be accomplished. What seems more probable is that an artificial subcutaneous tunnel is produced, in which under the most favorable conditions a tendon graft might move with a fair degree of freedom but in which more often the formation of fibrous tissue produces a serious obstacle to the gliding movement of the graft. In fairness it must be added that the author does not claim to have found a perfect method but states that he is attempting by his clinical experiments to find the most satisfactory method of introducing tendon grafts into the finger.

An interesting chapter on reconstruction of the thumb and an extensive bibliography form the concluding chapters.

The Duodenum: Its Structure and Function, Its Diseases and Their Medical and Surgical Treatment. By Edward L. Kellogg, M.D., F.A.C.S., Professor of Surgery, New York Polyclinic Medical School. With a foreword by George David Stewart, M.D., F.A.C.S. Chapter on Duodenal Parasites by Bailey K. Ashford, M.D., Sc.D., Professor of Tropical Medicine and Mycology, University of Porto Rico and Columbia University, N. Y. Section on X-Ray Diagnosis by A. Judson Quimby, M.D., Professor of Roentgenology, New York Polyclinic Medical School. Cloth. Price, $10. Pp. 855, with 287 illustrations. New York: Paul B. Hoeber, Inc., 1933.

This is the first book written in English devoted to a discussion of the diseases of the duodenum. It is a large book, of which approximately three fourths is devoted to the consideration of the various aspects of the duodenum and the remainder to an extensive bibliography and index. The chapter on physiology was reviewed by Dr. A. C. Ivy, that on parasitology was contributed by Dr. Bailey K. Ashford, that on x-rays was contributed by Dr. A. Judson Quimby, and the text dealing with laboratory procedures was reviewed by Dr. F. M. Jeffries. The subject matter is for the greater part well presented with beautiful illustrations, original and borrowed, and the print is excellent and easy to read. There are numerous case reports appended to the discussions and a compilation of all or nearly all of the recorded cases of the rarer conditions described in the literature. There seems to be no valid reason for having a separate chapter on duodenal toxemia when the subject rightfully belongs to chapter XVII, which describes acute gastromesenteric ileus—a term evidently replacing acute dilatation of the stomach, so frequent after abdominal operations. The statement that urobilinogen is not normally present in the duodenal contents is not in accord with general knowledge, nor is it necessary to have an excess of urobilin to show urobilinogen in the duodenal contents. Also one must challenge the statement of the value of the quantitative examination of the stool for urobilin as an index of hemolysis in the circulation. The chapter on lesions of the biliary tract in relation to diseases of the duodenum includes a discussion of the effects of pressure of the gallbladder on the duodenum, adhesions between these organs, pylorospasm and pyloric hypertrophy occurring and causing symptoms after removal of the gallbladder, periduodenitis, and the rôle of biliary calculi in the production of intestinal obstruction. The chapter on duodenal ulcer gives a good review of the etiology. The development of diverticula after healing of ulcers and the subsequent results are insufficiently emphasized. The author is evidently not in favor of subtotal resection as a form of surgical treatment of ulcer because he gives it scant consideration, does not describe the complete technic in the chapter on surgical treatment, and fails to mention subtotal resection or the name Polya in connection with this subject. A reference to resection is mentioned in the bibliography but not in the reading matter. The author further misstates the facts when he says that the good results of resection are due to the development of achlorhydria, whereas the real facts are that the acid-bearing cells of the stomach are in the fundus and are not removed by resection. The favorable results are due to the removal of the ulcer and ulcer-bearing area in the duodenum and stomach and the ensuing rapid emptying of the stomach. He also fails to emphasize the importance of hemorrhage or its symptoms in gastrojejunal ulcer. If one criticism was to be made of this work, it might be that there is a lack of balance in stressing the more from the less important subjects. One can almost expect this, however, in a large book devoted to one subject. It can be recommended as an excellent reference book to internists and surgeons.

Principles of Genetics: A Textbook, with Problems. By Edmund W. Sinnott, Professor of Botany, Barnard College, Columbia University, and L. C. Dunn, Professor of Zoölogy, Columbia University. Second edition. Cloth. Price, $3.50. Pp. 441, with 168 illustrations. New York & London: McGraw-Hill Book Company, Inc., 1932.

Medical science has made rapid progress in the last several decades. At the same time, during the past few years, genetics also made rapid strides. The busy physician, too, has but little opportunity for keeping up with the advancements made in this field. The second edition of this book has been prepared in order that recent investigations might be incorporated. Such topics as the induction of mutations by radiation, the discovery of segmental interchange between chromosomes and the extension of the balance theory of sex are discussed. In addition, new chapters have been added on the contributions of genetics to evolutionary theory and genetics and development. The facts of the principles of genetics are clearly presented in an easily comprehended style, with many highly illustrative diagrams and charts. This book should be found quite valuable for students, and interesting and profitable for the physician.

Kommunalärztliche Abhandlungen. Herausgegeben von Dr. B. Harms, Stadtarzt, Berlin, und Dr. Fr. Wendenburg, Beigeordneter, Gelenkirchen. [Nr.] 7: Organisation und Arbeitsmethoden der kommunalen Schulzahnpflege. Von Dr. med. dent. J. Kientopf, Direktor der städtischen Schulzahnklinik Berlin-Kreuzberg. Paper. Price, 14.80 marks. Pp. 148. Leipzig: Leopold Voss, 1933.

In the preface, Dr. Kientopf states that the purpose of the book is to give an account of the development and methods of providing dental care for school children in Germany. He has been in the school dental service twenty-three of the thirty years of its existence. The first part deals with the history of the development. Starting as an outgrowth of general health examinations, two dental clinics were established in 1902 in Dresden and Darmstadt. By 1929, 822 cities and 118 towns had organized clinics or other means of giving dental care to school children. The second part describes in detail the methods of procedure in carrying out systematic school dental service. The equipment is either stationary, in larger cities, or portable by means of auto vans in less densely populated sections or is conducted in private offices. The personnel consists of graduate, licensed dentists and nurses who have definite duties to perform. They are carefully selected and must be in perfect health and have at least two years' experience in general dental practice. The organization requires that the dentists' health be safeguarded and provides for proper ventilation of operating room, protection against mercury vapors, an operating stool, a rubber inset in the floor around the chair and other conveniences. Orthodontic

treatment is not given unless it can be provided for through insurance or sickness funds. How the costs of the care are met by community, state, insurance and private contributions comprises a valuable and informative part of the book. About thirty pages is devoted to the various forms used for records, notifications and instructions to parents and children. These are interesting because of their unique wording. The book is instructive and interesting in that it gives a comprehensive study of the conditions under which the system developed. But it leaves one wondering what the future development will be, following the present economic crisis, because of the enormous growth of the movement and the layman's lack of interest and of means to support it properly.

History of Urology. Edited by Bransford Lewis, Chairman, Edgar G. Ballenger, William A. Frontz and Homer G. Hamer. Prepared under the auspices of the American Urological Association. In two volumes. Cloth. Price, $8 per set. Pp. 385; 361, with illustrations. Baltimore: Williams & Wilkins Company, 1933.

The American Urological Association here attempts to record the history of the developments that have led to the rapid progress of urology as a specialty during the last thirty years. By urology is meant, broadly, the department of medicine that deals with the genito-urinary system, except the female reproductive organs. In these two volumes are assembled thirty contributions by American urologists on various aspects of the history of urology. A few chapters deal with the beginnings of urology in this country, but the greater part of the work is devoted to historical articles on the development of the knowledge of urologic diseases and abnormal conditions, together with their diagnosis and their treatment by surgical and other methods. An impressive amount of interesting historical material has been placed on record. At the ends of most of the chapters are more or less extensive lists of pertinent references. The publisher's part is well done. The work suffers from one serious shortcoming, which inevitably will tend to lessen its usefulness: the lack of author and subject indexes.

Der Wasserversuch als Nierenfunktionsprüfung: Eine Zusammenfassung für den Kliniker und praktischen Arzt. Von Dr. med. Ferdinand Lebermann, Facharzt für innere Krankheiten in Würzburg. Paper. Price, 9.50 marks. Pp. 145, with 20 illustrations. Dresden: Theodor Steinkopff, 1932.

The student who attempts to unravel the details of the various theories of renal function and then seeks to apply these theories in explaining the clinical observations in the various types of renal disease soon comes to feel that he is facing a problem compared to which the unraveling of the Gordian knot would be child's play. Furthermore, while the usefulness of functional tests in the recognition and in following the evolution of renal disease is generally recognized, there is no such agreement as to the choice of these tests. Each year sees the introduction of new methods for determining the functional capacity of the kidneys, and the proponents of each insist that their method is theoretically the most accurate and sensitive and, therefore, the method of choice. This is not the place to review the merits of these conflicting claims. Besides, lack of adequate laboratory facilities and questions of expense unfortunately preclude the use of many of these tests by the majority of physicians. Lebermann, therefore, does the general practitioner a service in calling attention anew to the simplicity of technic, the ease of performance, and the clinical usefulness of the combined water and concentration tests of Volhard and Strauss. In the present monograph he reviews the various theories of renal secretion, the maintenance of the water balance of the body, the pathogenesis of edema, the technic and normal response to the combined water and concentration tests, and the response to this test in various types of renal disease. There is an extensive bibliography and a satisfactory index. American readers will find the book disappointing in the absence of reference to the recent and fundamental work done in this country, particularly that of Richards, Marshall, Van Slyke and their co-workers. The failure to discuss the variation in the response to the water and concentration test by normal individuals seriously hampers the physician who seeks to apply it in his clinical practice. The goal of the author is worth while and, while it is not attained, the difference in the point of view from that common in this country makes this an interesting and, to the thoughtful physician, a stimulating presentation.

Medicolegal

Malpractice: Consent to Operation; Standard of Professional Skill.—One of the plaintiffs, a married woman, consented to the extraction of twenty-three of her teeth by the defendant, a licensed dentist, but she insisted that he should not extract all at the same time. Notwithstanding this, the dentist, after administering an anesthetic, extracted the twenty-three teeth at one sitting. The plaintiff was ill for some time after the operation and she attributed her illness to it. In a suit instituted by her and her husband, the court submitted to the jury two questions: first, the dentist's liability for the alleged unauthorized removal of the teeth; second, his liability for negligence. The jury returned verdicts aggregating $2,300, and the defendant then appealed to the superior court of Pennsylvania.

"Where a patient is in possession of his faculties and in such physical health as to be able to consult about his condition, and where no emergency exists making it impracticable to confer with him, his consent is a prerequisite to a surgical operation by his physician," said the superior court, quoting 30 Cyc. 1576, 1577. An operation without the consent of the patient under such circumstances constitutes a technical assault. *Throne* v. *Wandell,* 176 Wis. 97, 101, 186 N. W. 146, 147. In such a case the defendant is liable for such damages as were occasioned by the assault, no matter how much care and skill he exercised. In the present case, however, the court was of the opinion that the evidence did not warrant verdicts aggregating $2,300 and that the verdicts were therefore excessive.

The plaintiffs contended that the extraction of twenty-three teeth at one time constituted negligence. A physician, said the superior court, must employ such reasonable skill and diligence as are ordinarily employed in his profession in the same general neighborhood, having due regard to the advanced state of the profession at the time. If there is a dispute as to whether a physician has done so, a question of fact is presented which is for a jury to determine. If the symptoms of a disease or injury are such as may lead a skilful practitioner, using his best knowledge and judgment, to a mistake in diagnosis, the practitioner is not liable for that error of judgment; a jury will not be permitted to return a verdict against him because of it. Where competent medical authority is divided, a physician will not be held responsible if in the exercise of his judgment he follows the course of treatment advocated by a considerable number of his professional brethren in good standing in the community.

A careful examination of all the testimony, said the court, shows that the plaintiff failed to furnish sufficient evidence to submit to the jury to justify it in concluding that there existed a reasonably general agreement among dentists that it was not proper practice to remove twenty-three teeth at one time. The testimony showed that competent medical authority is divided and that the defendant followed a practice followed by a considerable number of his professional brethren in good standing in the community. A witness for the plaintiff testified that it was the general opinion of "the majority of dentists" that to extract that number of teeth at one time would be bad practice, but the liability of the defendant does not depend on "the general opinion of the majority of dentists." If a physician were limited to the performance of operations for the treatment of disease in ways recognized by a majority of the profession, all advance would be impeded, if not prevented. The great contributions that have been made to medical science have been made by those who have departed from the charted course and furnished new and useful methods.

The welfare of citizens and therefore of the state itself demands that persons practicing medicine shall be able and careful. For an injury to a physician's patient resulting from that physician's want of requisite knowledge, care and skill, or from his failure to use reasonable care and diligence, or from his failure to exercise his best judgment, the physician is answerable. Nevertheless, the same public interest requires that a physician shall not be held liable when he acts in accordance with the practice followed by a considerable number of his professional brethren in good standing in his community. The physician is required to have due regard to the advanced state

of the profession at the time, which implies that useful improvements in methods of treatment will be a departure from what the majority have theretofore held.

Because of technical errors in the submission of this case to the jury, with consequent confusion in their minds as to the standards to be applied, the judgment of the lower court was reversed and the case remanded.—*Moscicki v. Shor (Pa.), 163 A. 341.*

Charitable Hospitals: Not Liable for Negligence of Nurses.—The plaintiff paid the defendant-hospital, a corporation not for profit, organized under the laws of Michigan, to care temporarily for his 2 weeks old baby, following the death of his wife. A baby of approximately the same age, the offspring of a father and his own daughter, was being cared for at the hospital at the same time. When the father of the baby of incestuous parentage called for it, one of the defendant's nurses, through negligence, gave him the plaintiff's baby. The mistake was discovered when the plaintiff called for his baby, but all effort to find his baby were fruitless. The father to whom the hospital had given the plaintiff's baby claimed that he had given it to strangers passing through the city in an automobile, but there was a strong intimation that the baby might be dead. The plaintiff sued the hospital.

Recognizing the rule prevailing in Michigan that a hospital formed for nonprofit purposes and supported by the benevolence of its contributors cannot be held liable for the torts of its agents or employees, the plaintiff based his suit on an implied contract to care for the baby at a stipulated fee per diem, the child to be returned when called for. But, said the Supreme Court, naming or labeling a count in a declaration a count in contract does not make it such when it is on its face a count in tort, nor is there any magic in the use of one term instead of the other, when the gravemen of the act complained of is the negligence or mistake of a servant of an eleemosynary institution exempted by law from liability. The plaintiff complained on appeal of the refusal of the trial court to grant a motion for a new trial, based in part on the claim that the defendant carried liability insurance. As far as that claim is concerned, said the Supreme Court, testimony would have been absolutely improper. *Sherwood* v. *Babcock,* 208 Mich. 536, 175 N. W. 470; *Williams' Adm'x* v. *Church Home,* 223 Ky. 355, 3 S. W. (2d) 753, 62 A. L. R. 721.

In directing a verdict in favor of the defendant-hospital, said the Supreme Court of Michigan, the trial judge correctly stated that there was no legal redress for the very great wrong done the plaintiff and that the great good generally accomplished by a hospital and the private contributions given for its support should not be impaired or even entirely wiped out by making it responsible for the occasional lapses of its employees.—*Greatrex v. Evangelical Deaconess Hospital (Mich.), 246 N. W. 137.*

Insurance: Syphilis Innocently Acquired a "Venereal Disease."—The defendant insurance company issued to the plaintiff a policy of life and sick benefit insurance. The policy provided that the insurer should not be liable for benefits on account of "any venereal disease or disease of venereal origin." The plaintiff suffered from syphilis, syphilitic aortitis, and hypertension. He sought to obtain benefits under the policy, contending that the "venereal diseases" excluded from the coverage of the policy were only such as were contracted through sexual intercourse, and that he, being an old man, and long since impotent, had not contracted and could not have contracted his syphilitic infection in that way. The trial court dismissed his suit, and he appealed to the court of appeal of Louisiana, Orleans. It is quite likely, said the court of appeals, that originally the term "venereal," as applied to diseases, was intended to describe only such diseases as result from sexual intercourse, for until medical science recognized the bacterial origin of disease, the communication of venereal diseases by any other method must have been unknown. The germs, however, that cause the so-called venereal diseases do not depend on sexual intercourse for their spread; they may be disseminated by a handshake, a kiss, a common drinking vessel, and in other ways. Consequently, when we use the phrase "venereal disease" today, we do not necessarily mean—as was once the case—a love or sexual disease. The term means rather one of several diseases that are still so identified with sexual intercourse as to be best described by the epithet venereal, although that epithet has now lost some of its appropriateness. The appellate court held that an insurance policy which excludes venereal diseases from its coverage imposes no liability on the insurer to compensate the beneficiary under the policy for the effects of syphilis, no matter how that disease may have been acquired. A venereal disease, whether it originates from sexual intercourse or from shaking the infected hand of a friend, is nevertheless a venereal disease—*Coleman v. National Life & Accident Ins. Co. (La.), 145 So. 298.*

Insurance: "Total Disability to Engage in Any Work" Construed.—A life and disability insurance policy provided certain benefits if the insured became totally and permanently disabled as the result of bodily injury or disease, so as to be prevented from engaging in any occupation and performing any work for compensation or profit. The policy provisions, said the Supreme Court of Minnesota, must be given a reasonable and practical construction, not inconsistent with the clear language therein used. So far as permitted by that rule, the policy provisions will be construed most favorably to the insured. A literal construction of all words used is not required. The policy will be considered as a whole. The court will take into consideration the situation existing when the policy was issued, the capabilities and occupation of the insured, and the risk intended to be covered. Total disability to engage in any occupational work for compensation or profit does not mean that the injured person must be wholly helpless. It means inability to perform any of the duties of any occupation which the insured might be ordinarily capable of performing. Although an injured person may be able to perform some parts of an occupation, he may be held to be totally disabled, unless he is able to perform the substantial and material parts of some gainful work or occupation with reasonable continuity.—*Wilson v. Metropolitan Life Ins. Co. (Minn.), 245 N. W. 826.*

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, Boston, September 18-22. Dr. William P. Wherry, 1500 Medical Arts Building, Omaha, Executive Secretary.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Lucerne-in-Quebec, Canada, September 11-14. Dr. Magnus A. Tate, 19 West Seventh Street, Cincinnati, Secretary.

American College of Surgeons, Chicago, October 9-13. Dr. Franklin H. Martin, 40 East Erie Street, Chicago, Director-General.

American Congress of Physical Therapy, Chicago, September 11-15. Dr. F. B. Balmer, 35 East Wacker Drive, Chicago, Secretary.

American Public Health Association, Indianapolis, October 9-12. Dr. Kendall Emerson, 450 Seventh Avenue, New York, Acting Executive Secretary.

American Roentgen Ray Society, Chicago, September 25-30. Dr. Eugene P. Pendergrass, 3400 Spruce Street, Philadelphia, Secretary.

Associated Anesthetists of the United States and Canada, Chicago, October 8-12. Dr. F. H. McMechan, 318 Hotel Westlake, Rocky River, Ohio, Secretary.

Association of Military Surgeons of the United States, Chicago, September 25-27. Dr. J. R. Kean, Army Medical Museum, Washington, D. C., Secretary.

Colorado State Medical Society, Colorado Springs, September 14-16. Mr. Harvey T. Sethman, 537 Republic Building, Denver, Executive Secretary.

Delaware, Medical Society of, Wilmington, September 26-27. Dr. W. O. La Motte, 604 Medical Arts Building, Wilmington, Secretary.

Idaho State Medical Association, Twin Falls, September 18-19. Dr. Harold W. Stone, 105 North Eighth Street, Boise, Secretary.

Indiana State Medical Association, French Lick, September 25-27. Mr. T. A. Hendricks, 23 East Ohio Street, Indianapolis, Executive Secretary.

Kentucky State Medical Association, Murray, September 11-14. Dr. A. T. McCormack, 532 West Main Street, Louisville, Secretary.

Michigan State Medical Society, Grand Rapids, September 12-14. Dr. F. C. Warnshuis, 148 Monroe Avenue, Grand Rapids, Secretary.

Nevada State Medical Association, Las Vegas, September 29-30. Dr. Horace J. Brown, 120 North Virginia Street, Reno, Secretary.

New England Surgical Society, Boston, September 29-30. Dr. J. M. Birnie, 14 Chestnut Street, Springfield, Mass., Secretary.

Ohio State Medical Association, Akron, September 7-8. Mr. Don K. Martin, 131 East State Street, Columbus, Executive Secretary

Pennsylvania, Medical Society of the State of, Philadelphia, October 2-5. Dr. Walter F. Donaldson, 500 Penn Avenue, Pittsburgh, Secretary.

Southern Minnesota Medical Association, New Ulm, September 25. Dr. M. C. Piper, Mayo Clinic, Rochester, Secretary.

Utah State Medical Association, Salt Lake City, September 14-16. Dr. L. R. Cowan, 305 Medical Arts Building, Salt Lake City, Secretary.

Vermont State Medical Society, Barre, October 5-6. Dr. W. G. Ricker, 31 Main Street, St. Johnsbury, Secretary.

Washington State Medical Association, Seattle, August 28-30. Dr. Curtis H. Thomson, 1305 Fourth Avenue, Seattle, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

8: 441-584 (April) 1933

Gallop Rhythm and Physiologic Third Heart Sound: I. Characteristics of Sounds, Classification, Comparative Incidence of Various Types and Differential Diagnosis. C. C. Wolferth and A. Margolies, Philadelphia.—p. 441.

*P Wave Changes in Acute Coronary Artery Occlusion. A. M. Master, New York.—p. 462.

Clinical Observations on Dynamics of Ventricular Systole: IV. Mitral Insufficiency and Mitral Stenosis. H. Feil and D. D. Forward, Cleveland.—p. 471.

Heart Disease in General Medical Practice: Preliminary Report of Morbidity Survey Conducted by the New York State Department of Health. J. V. DePorte, Albany, N. Y.—p. 476.

Reversal in Direction of QRS Complex of Experimental Right Bundle-Branch Block with Change in Heart's Position. W. Ackerman and L. N. Katz, Chicago.—p. 490.

Study of Viscerocardiac Reflexes: I. Experimental Production of Cardiac Irregularities by Visceral Stimulation. S. E. Owen, Chicago.—p. 496.

Id.: II. Experimental Production of Cardiac Irregularities in Icteric Dogs with Analysis of Rôle Played by Nausea and Vomiting. P. J. Crittenden and A. C. Ivy, Chicago.—p. 507.

*Significance of Large Q in Lead III of Electrocardiogram During Pregnancy. F. B. Carr, Worcester, Mass.; B. E. Hamilton and R. S. Palmer, Boston.—p. 519.

Electrocardiographic and Blood Pressure Changes in Experimental Pericardial Effusion and Occlusion of the Venae Cavae. E. B. Bay, W. Gordon and W. Adams, Chicago.—p. 525.

Simple Method for Graphic Description of Cardiac Auscultatory Signs. H. N. Segall, Montreal, Canada.—p. 533.

Aortic Aneurysm with Huge Secondary Aneurysm of Chest Wall: Report of Case. L. E. Hines and J. R. Miller, Chicago.—p. 537.

P Wave Changes in Coronary Occlusion. — Master demonstrates that definite changes in the P waves occurred in thirty-two (80 per cent) of forty cases of acute occlusion of the coronary artery. These changes consisted for the most part in an increase in the amplitude of the P wave of at least 0.5 mm. and occasionally in notching or widening of the auricular complex. In sixteen patients (40 per cent) the P waves measured 2 mm. or more in height in some lead. The change occurred more frequently in leads I and II than in leads II and III, but always in lead II. The author suggests that P wave changes in leads I and II are associated with left auricular dilatation. The P waves were larger in the first few days of acute illness when cyanosis, congestion of the lungs, enlarged liver, severe dyspnea or orthopnea were present and became smaller when there was recovery from circulatory failure. The P waves were larger when RST changes were present and returned to normal when T wave inversions appeared. There is evidence that the larger P wave early in acute disease of the coronary artery is indicative of a dilated auricle, and it is suggested that this chamber takes over a portion of the work of the injured ventricle. The increase in size or the change in the shape of the P wave is one of the electrocardiographic signs of acute occlusion of the coronary artery.

Large Q in Lead III of Electrocardiogram During Pregnancy.—Carr and his associates found a large Q_3, as defined by Pardee, in 17 of the 342 pregnant women referred to their hospital for an estimation of their cardiovascular status. This is slightly less than 5 per cent. Ninety-eight of these women had organic heart disease or signs that justified a diagnosis of possible organic heart disease. Only three of these patients, slightly more than 3 per cent, had a large Q_3. Of the 342 women, 244 had no organic heart disease. Fourteen of these, 5.7 per cent, had a large Q_3. The anginal syndrome was not present in any of this series, nor have the authors ever found it in a pregnant woman. A large Q_3 may occur transiently, apparently modified by phases of respiration. They found nine such cases in this series. A large Q_3 is frequently associated in this series with an inverted T_3 and a low or inverted P_3. These observations are characteristic of a transverse position of the heart, according to evidence from the literature. The comparatively frequent occurrence of a large Q_3 during pregnancy in patients with normal hearts, as contrasted with its reported rare occurrence in a series of patients with normal hearts in which pregnancy was not mentioned and probably was rarely present, suggests that a large Q_3 may be related to a transverse position of the heart such as occurs during pregnancy. In the authors' opinion, therefore, a large Q_3 is not reliable as a sign of heart disease.

American Review of Tuberculosis, New York

27: 315-410 (April) 1933

Rôle of Emotion in Tuberculosis. Mary B. Eyre, Claremont, Calif.—p. 315.

*Gastric Function in Pulmonary Tuberculosis. S. J. Cohen, Chicago.—p. 330.

Blood Pressure in Tuberculosis: Study of Two Hundred and Thirty Consecutive Tuberculosis Patients. A. R. Masten, Wheat Ridge, Colo.—p. 342.

Generalized Tuberculosis Complicated by Presence of Yeastlike Organisms: Report of Clinical History and Necropsy. H. W. Ferris, New York.—p. 348.

Closure of Adherent Tuberculous Cavities by Combined Artificial Pneumothorax and Phrenicectomy. P. Slavin, Glen Gardner, N. J.—p. 355.

*Effects of Cod Liver Oil Concentrate Injections: Preliminary Report, with Especial Reference to Pulmonary Disease. B. Gordon and R. J. Titherington, Philadelphia.—p. 368.

Appliance for Immobilization in Pulmonary Tuberculosis. S. C. Davis, Tucson, Ariz.—p. 375.

*Tuberculin and Schilling Blood Differential Count in Diagnosis and Classification of Tuberculosis. J. F. Bredeck, St. Louis.—p. 377.

Effect of Tuberculin on Spermatozoa from Normal and Tuberculous Guinea-Pigs. Lillian C. Donaldson and A. J. Vorwald, Chicago.—p. 401.

Gastric Function in Pulmonary Tuberculosis. — Cohen concludes from the results of 1,000 Ewald meals, of which 134 were in minimal cases of tuberculosis, 530 in moderately advanced cases and 336 in far advanced cases, that, as the tuberculous process increases in the lungs, there is a corresponding diminution of free acid in the gastric juice. The percentage of achlorhydria in the various stages of the disease is practically the same, averaging about 7 per cent. This percentage is practically the same as in any nontuberculous group of patients. There is an increase in the latent period for the onset of the secretion of free acid in tuberculous patients. The motor activity of the stomach is within normal range. The pepsin concentration varies in direct proportion with the percentage of free acidity. The percentage of achlorhydria in patients with fever is about three and a half times as high as in those without fever. About 20.8 per cent of the patients complain of gastro-intestinal symptoms on entering the sanatorium. However, only 6 per cent of the patients develop these symptoms at the same time as they develop tuberculosis. The gastro-intestinal complaints of tuberculous patients represent complications of the disease rather than symptoms, and consequently one may not speak of a "pretuberculous dyspepsia."

Effects of Cod Liver Oil Injections.—Gordon and Titherington gave injections of cod liver oil concentrate to animals with vitamin A deficiency and to sixty-four (twelve suffering from active pulmonary tuberculosis) tuberculous and nontuberculous patients with a possible reduction in the storage of the vitamin A fraction. In the animals there was a decrease in the signs of vitamin A deficiency following the injection of concentrate. In the patients a decrease in certain manifestations occurred following a series of concentrate administrations. So far as determined, there was no evidence of a specific effect on the tuberculous lesions. The possible value of parenteral administrations of cod liver oil concentrate was considered in patients with low resistance to the existing infection who are unable to tolerate foods rich in vitamin A values. In the present stage of the clinical study the influence on tuberculosis cannot be evaluated because the patients have not been followed for a sufficient period of time. An increase in strength and appetite, and a sensation of well being and decreased pain in the chest were not uncommon in the ambulatory patients. The influence on weight was variable, nine showing a gain in weight of from 1.5 to 3.2 Kg.

Schilling Blood Count in Tuberculosis.—Bredeck presents the results of the Schilling differential count as observed

in 305 cases in which the subcutaneous tuberculin test was used. He made an analysis of the various types of cases, all of which were under observation for two years or longer following subcutaneous tuberculin tests. He concludes that the interpretation of the clinical importance of the subcutaneous tuberculin test can best be judged by the Schilling blood differential count. The Schilling count is a more accurate measure of induced focal reactions than are fever, general tuberculin reactions, physical signs, or x-rays. A classification of the various stages of activity as well as those of healing can best be made by the Schilling count together with the subcutaneous tuberculin test. The subcutaneous tuberculin test together with the Schilling count is the most delicate and accurate method in the diagnosis of early manifest and induced focal activity.

Annals of Internal Medicine, Ann Arbor, Mich.

6: 1251-1370 (April) 1933

The Heart in Myxedema: Electrocardiograms and Roentgen-Ray Measurements Before and After Therapy. J. Lerman, R. J. Clark and J. H. Means, Boston.—p. 1251.
Heredity in Diabetes. W. Allan, Charlotte, N. C.—p. 1272.
Undulant Fever: Fatal Case. R. C. Rothenberg, Cincinnati.—p. 1275.
Subacute Yellow Atrophy of Liver Following Ingestion of Cinchophen and Allied Compounds. W. K. Grigg and V. C. Jacobsen, Albany, N. Y.—p. 1280.
*Migrating Pneumonia: Certain Mechanical Factors in Its Production, Prevention and Treatment. W. B. Faulkner, Jr., A. N. Fregeau and E. C. Faulkner, San Francisco.—p. 1289.
Maintenance Dosage of Liver Extract in Treatment of Pernicious Anemia. P. J. Fouts and L. G. Zerfas, Indianapolis.—p. 1298.
*Cardiospasm with Associated Arthritis. J. H. Fitzgibbon, Portland, Ore.—p. 1305.
*Study of Eight Hundred Abnormal Electrocardiograms and Associated Clinical Conditions. M. A. Mortensen, Battle Creek, Mich.—p. 1308.
Value of Posterior-Anterior Chest Lead in Cardiac Diagnosis. A. Lieberson and F. Liberson, New York.—p. 1315.
Localized Atrophy of Subcutaneous Fat Following Repeated Injections of Insulin: Report of Case. F. Engelbach, Ann Arbor, Mich.—p. 1322.
Primary Spondylitis. W. P. Holbrook, R. M. Stecher and E. M. Hayden, Tucson, Ariz.—p. 1327.
Teaching of Inheritance of Disease to Medical Students: Proposed Course in Medical Genetics. Madge Thurlow Macklin, London, Ont., Canada.—p. 1335.

Migrating Pneumonia.—The Faulkners and Fregeau state that postoperative massive collapse of the lung has many characteristics in common with bronchopneumonia and lobar pneumonia. Both show strong tendencies to migrate to identical areas following similar changes in the posture of the patient. They present evidence which shows that the migrations in pneumonia are on a mechanical basis. They are dependent on the original site of the pneumonia, the posture of the patient, the intrabronchial anatomy, and the amount and viscosity of the intrabronchial pus. This whole problem is intimately connected with the mechanism of "internal drainage," i. e., the spilling of secretion from place to place within the same or the opposite lung. Thin secretion spills deeply into the lung, plugs small scattered bronchi and produces a migratory bronchopneumonia. More viscid material gravitates less readily. It leads to obstruction and infection of the major bronchi, resulting in a migratory lobar pneumonia. The administration of expectorants, the use of saturated solution of potassium iodide to lessen the viscosity of the secretions, and the adoption of proper postures offer a means of evacuating the bronchi and preventing internal drainage, which is responsible for the production of migrating pneumonia. The bronchoscopic removal of the intrabronchial exudate is to be recommended whenever the patient fails to respond promptly to other therapeutic measures.

Cardiospasm with Associated Arthritis.—Fitzgibbon has treated a patient for five years in whom cardiospasm and arthritis are associated. Symptoms of arthritis have at times accompanied the appearance of difficulty in swallowing but have improved after dilation of the stenosis. From the course of the patient's arthritis, the author assumes that improvement was the result of relieving the stricture of the esophagus. Previous to dilation, the patient regurgitated large amounts of mucopurulent, blood streaked material from the esophagus and showed signs of having rather marked esophagitis due to retention above the stricture. The author concludes that the inflammatory lesions in the esophagus acted as foci of infection, which activated the arthritis, and that drainage resulting from the relief of the stenosis permitted healing of these lesions with improvement in the arthritic symptoms.

Abnormal Electrocardiograms and Associated Clinical Conditions.—In his study of 800 abnormal cardiograms, Mortensen found all groups of cardiac diseases represented. He classifies them into three main groups: those that are supposedly due to irritation of the myocardium, those due to infections, and those due to degenerative processes. He states that, in the management of the various types of cases, the best program in his experience is to eliminate anxiety or fear and consider focal infections and toxins, such as coffee, tea and tobacco, as possible causes. It is also important to eliminate reflex disturbances of gastro-intestinal origin. In addition, one should consider the use of quinidine sulphate and sometimes a mild sedative for relief. Auricular fibrillation deserves a good prognosis under proper management. Careful judgment must be used in the exhibition of quinidine sulphate, as permanent relief of arrhythmia takes place in only a small percentage of cases. It should be avoided in severe cases of mitral stenosis. When there is a suggestion of decompensation, digitalis is the remedy of choice. When one is developing a program of exercise, each patient must be considered individually. A vigorous program of weight reduction by diet and physical therapy may be ventured in the more robust patient who is closely observed, if definite evidence of myocardial inefficiency is lacking. Little food is necessary to maintain the desired weight when it is once established. In patients presenting marked hypertension, particularly those with high diastolic pressure and marked renal inefficiency, the protein intake can be safely reduced to 50 or 60 Gm. daily. The use of fruits and fruit juices should always be encouraged and should furnish a considerable portion of the carbohydrate. Experience convinces the author that the greatest reduction in blood pressure and improvement in cardiac efficiency is obtained by reduction in weight, exercise, and a careful regulation of the patient's daily program with reference to work and recreation.

Archives of Neurology and Psychiatry, Chicago

29: 683-934 (April) 1933

Development of Meninges: Further Experiments. S. C. Harvey, H. S. Burr and E. VanCampenhout, New Haven, Conn.—p. 683.
Subdural Space and Its Linings. T. Leary and E. A. Edwards, Boston.—p. 691.
*Myelitic and Myelopathic Lesions: III. Arteriosclerotic and Arteritic Myelopathy. M. Keschner and C. Davison, New York.—p. 702.
Rhythmic Myoclonus of Muscles of Palate, Pharynx, Larynx and Other Regions: Clinical Report of Three Cases. H. A. Riley and S. Brock, New York.—p. 726.
*Palatal Myoclonus: Report of Two Cases with Necropsy. W. Freeman, Washington, D. C.—p. 742.
Cerebral Circulation: XXI. Action of Hydrogen Sulphide. H. S. Forbes and Catherine C. Krumbhaar, Boston.—p. 756.
Id.: XXII. Venous Pressure: Effect of Caliber of Pial Arteries. K. H. Finley and H. S. Forbes, Boston.—p. 765.
Pain and Touch Fibers in Peripheral Nerves. P. Heinbecker, G. H. Bishop and J. O'Leary, St. Louis.—p. 771.
Effects of Alcohol on Chronaxia of Motor System. W. Malamud, E. Lindemann and H. H. Jasper, Iowa City.—p. 790.
*Ten Years' Experience in Treatment of Epilepsy with Ketogenic Diet. H. F. Helmholz and H. M. Keith, Rochester, Minn.—p. 808.
*Etiology of Polyneuritis. I. S. Wechsler, New York.—p. 813.
Measurement of Electrical Skin Resistance. M. Levine, Cincinnati.—p. 828.
Syndrome of Fibrillary Astrocytomas of Temporal Lobe. B. Schlesinger, Vienna, Austria.—p. 843.

Arteriosclerotic and Arteritic Myelopathy.—Keschner and Davison believe that myelopathic lesions secondary to circulatory interference within the cord from partial or complete occlusion of the spinal or meningeal vessels, or of both, may be due to arteritis or to arteriosclerosis. Of these, the latter, in contrast to the frequency of cerebral lesions due to atherosclerosis, is unusually rare, arteritis being much more common. In their eight cases of myelopathy due to vascular disease, there were two of atherosclerosis and six of arteritis. In the latter, syphilis was a factor in five cases, and tuberculosis in one. Except for the changes in the vessels, the histopathologic picture of the arteritic group does not differ essentially from that of toxic myelopathy. Clinically, cases of myelopathy due to arteritis present unusual difficulties in diagnosis. They may begin suddenly or gradually; they may begin with signs and symptoms of a level lesion of the cord; some of them may show evidences of diffuse involvement of the neuraxis at the onset; others may present a clinical picture of infectious myelitis, posterolateral sclerosis or multiple sclerosis, and still others may present a picture of an intramedullary or an extramedullary

neoplasm. The fact that soon after the onset there appear symptoms indicative of involvement of other components of the neuraxis, resembling in this respect the cases of toxic myelopathy, may be of diagnostic aid. Another diagnostic aid is the clinical, serologic or cytologic evidence of syphilis. Histopathologically, the atherosclerotic group showed marked destruction of the nerve cells, myelin sheaths and axis cylinders, accompanied by dense gliosis. In the arteritic group the changes were similar, except that the glial response was poor.

Palatal Myoclonus.—Freeman reports two cases in which myoclonic movements of the palate and pharynx were observed during life, associated with infarction of the central tegmental fasciculus and hypertrophic degeneration of the olivary body. Both cases were complicated by the occurrence of numerous lacunae in the brain stem and elsewhere. The author believes that the central tegmental fasciculus constitutes a part of the automatic faciorespiratory synkinetic system. It would appear to arise in the substantia innominata of Reichert, mostly contralateral but with some homolateral fibers decussating through the posterior commissure, and to fuse with the ventral ground bundle of the spinal cord. Its relationship to the inferior olive is evidently close, because of the degeneration of the latter structure after damage of the tract. The myoclonic movements of the palate and pharynx are part of a more complex movement, which in its full development comprises synchronous rhythmic movements of all the faucial musculature and of the larynx, face and diaphragm, and sometimes the intercostal muscles and fingers.

Ketogenic Diet in Treatment of Epilepsy.—Helmholz and Keith present the results of the treatment of 369 epileptic patients by means of the ketogenic diet. Fifty-one of these patients had symptomatic epilepsy, 42 were treated for one year or less, and 89 did not cooperate sufficiently for the authors to judge the effect of the diet. Twenty-seven patients could not be included in the group in which treatment was satisfactory because no information could be obtained from 14, 4 were not classified, and in 9 the diet was probably not responsible for the improvement. Of the remaining 160 in whom results can be judged, 36 per cent are well, 21 per cent are improved and 43 per cent were not benefited. These figures are similar to the authors' previous reports (1927 and 1930). They discuss the reason for the therapeutic anticonvulsive action of the ketogenic diet and point out that aceto-acetic acid and its sodium salt are able to prevent experimentally produced convulsions in rabbits, that their action is not quite so pronounced as the action of phenobarbital but is greater than that of the other acetone bodies tested and is more marked than even that of extreme dehydration.

Etiology of Polyneuritis.—After a study of nine cases of polyneuritis, Wechsler believes that the following conclusions are warranted: 1. Many cases of polyneuritis of obscure origin are probably neither toxic nor infectious in nature but more likely are deficiency syndromes. Even if, from their clinical appearances, they cannot be regarded as cases of beriberi or pellagra, they might still be grouped with the avitaminoses. This view is fortified if one can elicit a history of prolonged loss of appetite, diarrhea or vomiting, absence of free hydrochloric acid or other evidence of gastric, intestinal or hepatic disease. Sometimes the giving of foodstuffs rich in all vitamins or the administering of special vitamins will serve to prove the point. Polyneuritis of pregnancy, which is almost invariably preceded by severe vomiting and hence starvation, certainly belongs in this group. 2. In many cases of polyneuritis which have heretofore been regarded as due solely to a specific cause, such as alcohol, lead, arsenic or phosphorus, one finds an additional, possibly determining, factor in avitaminosis. This may be due to involvement of the gastro-intestinal tract or the liver, of which there is not infrequently clinical evidence. Such a view may explain why polyneuritis develops only in certain patients, although all are exposed to the same poison. 3. The fact that the general pathologic changes are degenerative rather than inflammatory and that in lead and diabetic neuritis the central nervous system degeneration is as important as peripheral degeneration furnishes pathologic evidence of some value. 4. While in beriberi and pellagra the antineuritic vitamins B_1 and B_2 or G, are involved, in some obscure cases and in some others in which the avitaminosis seems to play the decisive part it may be that other or additional vitamins are concerned. There is some experimental evidence which proves that absence of vitamin A and possibly also of C and D can lead to degenerative changes in the spinal cord, the roots and the nerves and that their presence will prevent degeneration by poisons which sometimes affect the nervous system.

Archives of Otolaryngology, Chicago

17: 457-624 (April) 1933

*Carcinoma of Lung and Bronchus: Treatment with Radon Implantations and Diathermy. J. D. Kernan, New York.—p. 457.
Bilateral Atresia of External Auditory Canal Without Malformation of Concha: Report of Case with Surgical Relief. B. N. Colver, Glendale, Calif.—p. 476.
Rôle Which the Epidermis Plays in Suppurations of Middle Ear. J. G. Druss, New York.—p. 484.
Genetic Factor in Otosclerosis. C. B. Davenport, Bess Lloyd Milles and Lillian B. Frink, Cold Spring Harbor, N. Y.—p. 503.
*So-Called Thymic Death: V. Respiratory Sensitization to General and Local Anesthetics. G. L. Waldbott, Detroit.—p. 549.
Disease of Sinuses: Diagnosis and Treatment by Displacement. J. R. Frazee, Boston.—p. 554.

Carcinoma of the Lung and Bronchus.—Of the sixty cases in which Kernan performed bronchoscopies, the tumors in only five were diagnosed early enough to offer any chance of cure. He reports ten cases, most of which were of fairly long duration. All the tumors sprang from the mucous membrane of the large bronchi. In spite of the fact that the five successful cases were graded malignant on Broders' scale, none had metastasized. It was possible to destroy the tumors with diathermy and radon implantations, and there have been no local recurrences as yet, although one case has been followed for five years. All the successful cases were in women. All the patients had suppuration in the lung beyond the site of the tumor. The symptoms varied. In some of the early tumors, pulmonary signs are due to blocking of the bronchus, and roentgen examination suggests a much more extensive pulmonary disease than is really the case. One patient, a girl, who is still well after eight years, in spite of a tumor graded 4, was only 17 at the time her case was diagnosed. Two others who are still well after five and two and a half years, respectively, were under 35 years of age, while the remaining two, who have lived two and three years after the tumors were treated, are both under 50.

So-Called Thymic Death.—Waldbott studied the pathologic changes in twelve cases of what has been termed "thymic death," four of which occurred during ether anesthesia. He observed features that indicate a marked resemblance to anaphylactic death as it is observed following injections of pollen and serum. He has collected a series of cases of human anaphylactic shock following the administration of substances other than protein and demonstrated that any substance which produces allergic symptoms, whether it contains protein or not, may also produce human anaphylactic shock, provided three conditions are fulfilled: an extreme degree of sensitivity, a dose above the patient's tolerance, and a rapid absorption of the antigen. The clinical manifestations are the same, no matter what the material that causes the shock. He believes that the best known evidences of sensitization to cocaine, procaine and similar chemicals are cutaneous manifestations, particularly in the form of contact dermatitis and urticaria. The author concludes that all allergic patients to be operated on should be tested for the anesthetic which is to be administered, and that a clinical test consisting of the inhalation of the general anesthetic or a previous administration of the local anesthetic, well diluted, should be made. A conjunctival test consisting of the application of a diluted solution of the local anesthetic into the conjunctival sac may aid in the discovery of sensitization. With a local anesthetic, special caution should be exercised to prevent an accidental intravenous injection. With the exception, perhaps, of the synthetic ephedrines, there is no drug known at present that prevents anaphylactic shock other than epinephrine. Such drugs should be given with every application of a local anesthetic. The retardation of the absorption of the anesthetic through its vasoconstrictive action, as well as the ability of epinephrine to counteract the basic lesion of anaphylaxis, namely, capillary dilatation, accounts for the beneficial effect of this drug in anaphylaxis.

Archives of Pathology, Chicago

15: 465-610 (April) 1933

Experimental Chronic Nephritis Produced by Radium. L. J. Adams, Montreal, Canada; W. C. Egloff and J. P. O'Hare, Boston.—p. 465.
Effect of Cinchophen on Albinic Rat. L. S. Radwin and M. Lederer, Brooklyn.—p. 490.
Reticulum in Tumors. L. L. Tureen and M. G. Seelig, St. Louis.—p. 498.
*Shock Syndrome in Mercuric Chloride Poisoning. V. H. Moon and B. L. Crawford, Philadelphia.—p. 509.
Coccidiosis of Liver in Rabbits: III. Experimental Study of Histogenesis of Coccidiosis of Liver. H. Smetana, New York.—p. 516.

Mercuric Chloride Poisoning.—Moon and Crawford report the case of a man who died of circulatory failure within thirty-seven hours after the ingestion of 175 grains (11.3 Gm.) of mercuric chloride. There was no clinical evidence of disturbance of the cardiac contraction impulse. There was no cardiac lesion which would indicate defective cardiac function as a cause of the circulatory failure. The shock syndrome was the most prominent clinical manifestation. Postmortem examination showed both gross and microscopic changes characteristic of shock: widespread dilatation of capillaries and venules, with edema and capillary hemorrhages. These were most marked in the organs of respiration. The evidence indicates that mercuric chloride may act as a capillary poison and that as such it produces the same circulatory phenomena and the same gross and microscopic changes as are found in shock.

Georgia Medical Association Journal, Atlanta

22: 123-162 (April) 1933

Tonsillectomy in Childhood Tuberculosis. E. Callaway, La Grange.—p. 123.
Endometrial Hyperplasia: Report of Cases. P. L. Holliday, Athens.—p. 125.
Study of Chronic Hepatic Entities, Except Tumors. J. J. Pilcher, Wrens.—p. 127.
The Country Doctor. H. K. Phillips, Cleveland.—p. 129.

Indiana State Medical Assn. Journal, Indianapolis

26: 147-208 (April 1) 1933

*Diagnosis and Treatment of Allergic Conditions and Chronic Infections of Respiratory Tract in Children. H. B. Mettel, Indianapolis.—p. 147.
Associated Psychoneurosis. P. S. Johnson, Richmond.—p. 154.
Diarrheas of Early Life: Simple Classification and Outline of Treatment. H. D. Lynch, Evansville.—p. 155.
Malignant Neutropenia: Case Report. Jane Ketcham, Indianapolis.—p. 159.
Public Opinion. F. T. Romberger, Lafayette.—p. 161.
Medical Relief in Kokomo. P. W. Ferry and R. P. Schuler, Kokomo.—p. 163.
Maternal Mortality and Common Sense. A. Hall, Springfield, Ill.—p. 165.
The Chiropractic Situation. F. Jett and A. W. Cavins, Terre Haute.—p. 169.

Diagnosis and Treatment of Allergic Conditions.—Mettel believes that any results obtained in the treatment of chronic sinus disease or allergic conditions of the nose and throat depend on the etiologic factor involved. Satisfactory results are entirely dependent on its treatment and control. It is certain that, if allergy can be controlled or possibly cured in early cases, advanced pathologic changes may be prevented, and the possibility of secondary infection consequently should surely be less probable. If all sinus cases would be considered as being either allergic with or without secondary infection, or as primarily infected or suppurative, benefit would be gained by the distinction. By following the principles of treatment adaptable to each group, one should be able to obtain far more satisfactory results than those prevailing in the past. This again can be accomplished only by the painstaking study of the pediatrician and the most competent cooperation of the rhinologist.

Johns Hopkins Hospital Bulletin, Baltimore

52: 255-324 (April) 1933

Description of the Osler Clinic: Its Organization. W. T. Longcope, Baltimore.—p. 255.
Description of the Halsted Surgical Clinic. D. Lewis, Baltimore.—p. 262.
The Henry M. Hurd Memorial Hall. W. H. Smith, Baltimore.—p. 267.
Presentation of the Portrait of Dr. John Whitridge Williams. H. J. Stander, Baltimore.—p. 271.
The Mental and Social Status of Fifteen Hundred Patients in the Obstetrical Clinic of the Johns Hopkins Hospital: How This Relates to Problems of Eugenics. Grace Baker, Baltimore.—p. 275.
Pigment in the Nails During Hyperthyroidism. H. M. Thomas, Jr., Baltimore.—p. 315.

Journal of Lab. and Clinical Medicine, St. Louis

18: 657-764 (April) 1933

Hemorrhagic Tendency in Jaundice: Study of Blood Fibrin, Sedimentation Rate, Coagulation Time and Other Blood Factors. C. F. Burke, Madison, Wis., and J. F. Weir, Rochester, Minn.—p. 657.
Studies of Calcium and Phosphorus Metabolism: XIX. Effect of Diet on Urinary Acid and Ammonia Excretion in Man. W. T. Salter, R. F. Farquharson and Dorothy M. Tibbetts, Boston.—p. 669.
*Variations in Certain Constituents of Blood of Relatively Normal Individuals. Esther M. Greisheimer and F. P. Arny, Minneapolis.—p. 680.
*Studies in Serology of Syphilis: XI. Clinical and Statistical Evaluation of New Flocculation Test for Syphilis: Based on 26,611 Tests in Comparison with Wassermann Reaction, and 2,473 in Comparison with the Kahn. H. Eagle, Baltimore.—p. 684.
Some Properties of Pneumocholin, Biochemical Antigen. E. E. Ziegler, Boise, Idaho.—p. 695.
Therapeutic Use of Iodized Oil in Pulmonary Disease. D. B. Cole and E. C. Harper, Richmond, Va.—p. 704.
*Corrected Erythrocyte Sedimentation Test. A. C. R. Walton, Baltimore.—p. 711.
Clinical Method for Serum Protein. M. J. Breuer, Lincoln, Neb.—p. 723.
Studies in Serology of Syphilis: X. Precipitation Tests for Syphilis with Spinal Fluids. H. Eagle, Baltimore.—p. 725.
New Details of Technic in Air Analysis. R. W. Swift, State College, Pa.—p. 731.
Automatic Method of Recording Blood Flow. A. L. Bennett and E. U. Still, Chicago.—p. 739.
Study of Vitali's Test for Atropine. C. F. Poe and R. Clemens, Boulder, Colo.—p. 743.
Modified Witt Filtration Apparatus Suitable for Multiple Potassium Determinations. A. R. McIntyre, Ann Arbor, Mich.—p. 750.
Concerning Stability of Glycerinated Hemolysin. R. A. Kilduffe, Atlantic City, N. J.—p. 751.
Giemsa Stain for Tissue: Rapid Method. W. L. McNamara, Hines, Ill.—p. 752.

Variations in Relatively Normal Blood.—Greisheimer and Arny studied seven constituents of the blood in 214 relatively normal persons (105 men and 109 women) in a fasting condition. The age range was from 18 to 77 years, with an average of 27.49 years. The mean for true dextrose is 84.01 ± 0.33; this agrees well with previous work by this method (Holt and Greisheimer, 1931, and Glassberg, 1931). The difference between the sexes is not significant. The true dextrose level bears no relation to the level of either calcium or inorganic phosphate; this was shown by the low correlation coefficients. The mean serum calcium is 10.591 ± 0.016. The present values are slightly lower than those found earlier (Greisheimer, 1929), but the difference between the two series is of doubtful significance. The mean inorganic phosphate is 3.419 ± 0.02. The inorganic phosphate level bears no relation to the serum calcium level, as was shown by the absence of correlation. The mean serum sodium chloride is 577.06 ± 0.72. The mean urea nitrogen is 13.53 ± 0.13; it formed 39.9 per cent of the total nonprotein nitrogen; it bears a definite relation to the total, as is shown by the high degree of correlation. The total nonprotein nitrogen is 33.91 ± 0.18; the mean for the men is significantly higher than that for the women. The mean uric acid is 3.24 ± 0.024; the mean for the men is significantly higher than that for the women.

New Flocculation Test for Syphilis.—Eagle devised a precipitation test, embodying (1) an optimal adjustment of the variables which control the aggregation, (2) the use of the centrifuge to facilitate aggregation and (3) the use of a new sensitizing substance, corn germ sterol, as an adjunct to cholesterol. He believes the advantages of the test to be (1) greater sensitivity, (2) simplicity of technic, (3) increased reliability, (4) convenience and (5) inexpensiveness. The author's material consists of 10,383 tests on approximately 1,500 known syphilitic patients under active treatment or observation and 16,228 tests on approximately 14,000 dispensary and hospital patients. This flocculation test has proved to be more sensitive than either the Wassermann or the Kahn reaction, detecting 75 per cent of 10,383 known syphilitic serums, as compared with 58.7 and 60.2 per cent for the Wassermann and Kahn reaction. It is comparatively free from doubtful results, only one in 137 tests (0.7 per cent) being dubious, as compared with 1.4 per cent for the Wassermann and Kahn reactions. In at least forty-six untreated cases of clinically active syphilis the precipitation test was positive, and with the Wassermann test negative or doubtful. To obtain the antigen, 50 Gm. of dried powdered beef heart is extracted at 37 C. for fifteen minutes with 200 cc. of ether with intermittent shaking. The process is repeated three times and the ether filtrates are discarded. The powder is dried and extracted with 250 cc. of 95 per cent ethyl alcohol

for from three to five days at 37 C. with repeated shaking. The extract is filtered and the moist powder washed with from 3 to 50 cc. portions of 95 per cent alcohol. The combined filtrate and washings are evaporated down to 250 cc. One and five-tenths grams of cholesterol and 1.5 Gm. of corn germ sterol are added and dissolved by boiling, a final concentration of 0.6 per cent for each. To perform the test, the antigen is heated at from 55 to 75 C. for a few minutes to dissolve all the sensitizer. One and three-tenths volumes of a 4 per cent solution of sodium chloride are blown into one volume of antigen, and the milky suspension allowed to "ripen" for at least thirty minutes at room temperature. Kept in the icebox, this suspension is good for from forty-eight to seventy-two hours, gradually increasing in sensitivity. The serums to be tested are inactivated at 56 C. for twenty minutes. To 0.4 cc. is added 0.04 cc. of the antigen dilution; the tubes are shaken for two minutes and placed at 37 C. for four hours. The tube is then centrifugated for fifteen minutes at 1,500 revolutions per minute, and 1.2 cc. of a 0.85 per cent solution of sodium chloride added. In a strongly positive serum there is seen a coarse aggregation of the antigen with a perfectly surrounding clear fluid. In a less strongly positive serum there are definite aggregates. A negative serum remains opalescent, with a homogeneous cloud of refractile particles. Any intermediate result, in which the contents of the tube seem finely granular, lacking the watered silk appearance of the negative reaction, or in which there are a few nondescript particles, is read as doubtful. All such doubtful results are recentrifugated at higher speed after shaking; if the test is really positive, the antigen forms a coherent white flake at the bottom of the tube. The recentrifugation of any doubtful result is essential for the best results.

Standardization of Sedimentation Test.—Walton describes a procedure which endeavors to standardize the erythrocyte sedimentation test. The method is as follows: By the usual method, 4.5 cc. of blood is withdrawn from an antecubital vein, taking great care not to produce an unnecessary degree of venous stasis; otherwise in a rapidly sedimenting blood some erythrocyte fall in vivo will occur. This specimen is rapidly introduced into a tube and intimately mixed with 0.5 cc. of sodium citrate solution already contained therein. A red cell count is made of this sample, so that it will be known how to divide approximately the 5 cc. specimen for dilution or concentration. It is usually expedient to place 2 cc. of blood in a small tube and to centrifugate the other 3 cc. in order to obtain plasma with which to dilute the specimen to be tested. The object is to have at least 2 cc. of blood the red cell content of which after appropriate addition of plasma will register an even million figure; i. e., 6,000,000, 5,000,000, 4,000,000 and so on. From this suspension one can readily abstract a sample of blood for a sedimentation test, so that the sedimentation tube will contain 1 cc. the content of which is 5,000,000 red cells per cubic millimeter. The sedimentation tube is now corked and an even suspension of blood obtained by inverting and rotating the tube about its long axis. If any air bubbles remain on the surface, they must be broken by the application of a heated glass rod before sedimentation is allowed to proceed. The sedimentation height or height of clear plasma lying above the column of red cells is measured at the end of one hour. The author also presents a modification of this method which requires 1 cc. of citrated blood to be used in those cases in which it is desirable to take only a small amount of blood.

Kansas Medical Society Journal, Topeka

34: 123-162 (April 1) 1933

Insects and Poisonous Snakes. W. A. Hayward, Coffeyville.—p. 123.
Diaphragmatic Hernia: Three Case Reports. K. A. Fischer, Arkansas City.—p. 127.
*Human Sarcosporidiosis: Case Report. R. M. Price, Wellington.—p. 132.
Oral Sepsis and Tooth Infection. L. C. Eberhart, LaCrosse.—p. 136.
Supraclavicularis Proprius Muscle. H. B. Latimer, Lawrence.—p. 138.

Sarcosporidiosis.—Price reports a case of sarcosporidial infection in a man, aged 55, in whom the parasite seems to have been the cause of a definite symptom complex, no other cause having been discovered for the patient's illness. Sarcosporidia are possibly more pathogenic for man than was formerly believed. Cattle, sheep and hogs should be more closely investigated for evidence of this infection. It seems that the disease may be acquired by eating infected meat, which was probably the mode of entrance in the author's patient.

Laryngoscope, St. Louis

43: 233-350 (April) 1933

Experimental and Clinical Study of Histiocytes in Acute and Chronic Inflammation of Accessory Sinuses. R. A. Fenton and O. Larsell, Portland, Ore.—p. 233.
Infection and Resistance in Upper Respiratory Mucosa. C. S. Linton, St. Louis.—p. 242.
*Otitic Infection with Gastro-Enteritis in Infants. M. Rabbiner, Brooklyn.—p. 274.
Correction of Postauricular Defect by Implantation of Fascia Lata. C. M. Griffith and A. Schattner, New York.—p. 280.
Rhinophyma: Case. H. L. Hunt, New York.—p. 282.
Nasopharyngeal Malignancy: Case Report. E. H. Moyle, New York.—p. 283.
Radium in Malignant Tumors of Nasal Sinuses. G. A. Robinson, New York.—p. 285.
Stylohyoid Ossification, Bilateral, and Injury of Ninth Nerve After Tonsillectomy. R. H. Fowler, New York.—p. 287.
Tonsillectomy in Presence of Thyroid Disease. H. G. Bullwinkel, New York.—p. 291.
Extrinsic Lipoma of Larynx. J. A. Flynn, Washington, D. C.—p. 294.
Laryngectomy, Fourteen Years Ago: Case. J. McCoy, New York.—p. 298.

Otitic Infection in Infants.—Rabbiner presents a study of nine cases of mastoiditis in infants associated with gastrointestinal disturbances. Of the nine infants, eight were operated on, resulting in four recoveries and four deaths. The other infant, who finally died, was not operated on, as he was considered a poor surgical risk The author concludes that mastoid surgery should be resorted to in those infants having otitic infection with parenteral diarrhea which cannot be checked by the pediatrician. The operation in all cases should be bilateral despite the fact that only one ear may show a definite otoscopic picture, while in the other the observations may be indefinite, as the infection may be confined to the antrum and is probably due to a localized pocketing of embryonal tissue around the aditus, the drum membrane not showing its true condition. The author believes that many of these infants have mild attacks of otitis media without symptoms which may or may not undergo complete resolution and act as a focus of infection. Although the intestinal history in each of his patients antedated the ear condition, the latter probably is a definite etiologic factor in this syndrome. He emphasizes the often stressed point that cooperation between the pediatrician and the otologist is most essential for the proper care of infants who suffer from this disturbance.

Medical Annals of District of Columbia, Washington

2: 71-98 (April) 1933

Life and Death Instincts. W. A. White, Washington.—p. 71.
Hour Glass Stomach: Review. W. W. Sager, Washington.—p. 76.
The Bonus Army: Health and Sanitary Problems. J. G. Cumming, Washington.—p. 82.
*Full Term Abdominal Pregnancy: Report of Case. J. J. Mundell, Washington.—p. 86.
Perforated Duodenal Ulcer: Summary of Fifteen Cases. J. G. Lewis, Washington.—p. 91.

Full Term Abdominal Pregnancy.—Mundell reports a case of full term abdominal pregnancy in which a practically normal live baby was obtained and in which the mother recovered, the placenta having been left in situ and the abdomen closed without drainage. Since the statement that at least 50 per cent of all mature babies in abdominal pregnancies are grossly malformed is incorrect, operation should be deferred until near term if the condition of the mother warrants it, in the best interest of both the mother and the baby. If the attachment of the placenta is widespread, it should be left in situ and the abdomen closed without drainage.

Medical Journal and Record, New York

137: 265-308 (April 5) 1933

Intestinal Toxemia. A. Bassler, New York.—p. 265.
Indications for Operation in Diseases of Gallbladder. M. Einhorn, New York.—p. 269.
Anesthesia in Gynecologic Surgery. M. C. C. Lilienfeld, New York.—p. 270.
How Yeasts are Related to Tumor Growths. J. A. Buchanan, Brooklyn.—p. 272.
Primary Acute Cholelithiasis and Appendicitis Occurring During the Puerperium. G. I. Miller, Brooklyn.—p. 275.
Head Injuries. R. O. Pfaff, Des Moines, Iowa.—p. 276.

Nebraska State Medical Journal, Lincoln

18: 121-160 (April) 1933

Acute Intussusception. C. W. Mayo, Rochester, Minn.—p. 121.
Consideration of Occipitoposterior Presentation, with Especial Attention to Diagnosis, and Delivery by the Scanzoni Maneuver. C. W. Dorsey, Denver.—p. 125.
Exfoliative Dermatitis: Approach to Its Pathogenesis. C. C. Tomlinson and O. J. Cameron, Omaha.—p. 128.
Differential White Blood Cell Count. E. B. Reed, Lincoln.—p. 133.
Prevention of Cancer of Cervix. P. Findley, Omaha.—p. 136.
First Annual Report of Use of X-Rays and Radium by the Tumor Clinic of the Creighton Memorial St. Joseph's Hospital. J. F. Kelly, Omaha.—p. 138.
Surgical Indications in Goiter. R. H. Whitham, Lincoln.—p. 143.
Torsion of Hydrosalpinx: Report of Two Cases. R. A. Moser and A. Brown, Omaha.—p. 144.
Subdiaphragmatic Abscess. M. Emmert, Omaha.—p. 147.
Chronic Inversion of Uterus: Report of Case. M. E. Grier, Omaha.—p. 148.

New England Journal of Medicine, Boston

208: 721-770 (April 6) 1933

Fractures of Femur: Study of End-Results in Sixty-Nine Cases. F. M. Findlay, Boston.—p. 721.
Postoperative Thrombosis and Embolism. E. L. Hunt, Worcester, Mass.—p. 730.
Carcinoma of Rectum. R. B. Cattell, Boston.—p. 740.
Progress in the Study of Cardiovascular Disease in 1931. S. McGinn and H. B. Sprague, Boston.—p. 747.

208: 771-818 (April 13) 1933

Brief Review of Essential Pathology of Pericarditis. C. F. Branch, Boston.—p. 771.
*Carcinoma of Buccal Mucosa: End-Results 1918-1926. C. C. Lund, Boston, and Hilda M. Holton, West Medford, Mass.—p. 775.
Diphtheria Immunization and the Private Practitioner. G. W. Anderson and G. H. Bigelow, Boston.—p. 781.
Cancer Mortality of Massachusetts, 1860-1929. F. L. Hoffman, Wellesley Hills, Mass.—p. 782.
Present Development of Psychiatric Technic in Criminal Process. Frances L. Roth, New Haven, Conn.—p. 785.
Progress in Study of Cardiovascular Disease in 1931. S. McGinn and H. B. Sprague, Boston.—p. 789.

Carcinoma of Buccal Mucosa.—Lund and Holton present the five-year end-results in 1,126 carcinomas of the mouth seen from 1918 to 1926, inclusive. The cases have been analyzed and presented according to a classification that is slightly modified from that of the American College of Surgeons. It is shown that small cancers of the mouth are curable in a much higher percentage of cases than has been realized. The authors present and discuss data on the problem of the best form of treatment, but they have drawn no final conclusions. This discussion includes surgical methods, radium treatment, combined surgery and irradiation, radical versus incomplete surgery, and surgery versus irradiation.

New Jersey Medical Society Journal, Orange

30: 299-370 (April) 1933

*Management of Running Ear. G. W. Mackenzie, Philadelphia.—p. 299.
Chronic Suppurative Otitis Media: Conservative Management and Treatment. E. A. Atwood, Paterson.—p. 304.
Problems in Modified and Radical Mastoid Operations. C. W. Buvinger, East Orange.—p. 310.
The Child Who Will Not Eat. S. A. Levinsohn, Paterson.—p. 314.
Carcinoma of Thyroid, with Skeletal Metastases. W. W. Maver, Jersey City.—p. 318.
*Acute Silicosis. R. Pomeranz, Newark.—p. 320.
Myocardium Following Acute Infections. C. L. Andrews, Atlantic City.—p. 326.
National Health Insurance of England Applied to These United States. A. Sinson, Brooklyn.—p. 332.

The Running Ear.—Mackenzie points out that, when an otologist makes the diagnosis of "otitis media suppurativa chronica," he does no better than the patient who states that he has had a "running ear for a long time." A diagnosis worthy of the name must be comprehensive. It should include an exact knowledge of the following facts: 1. Every possible etiologic factor. 2. Whether the particular etiologic factor still exists. 3. Have secondary changes arisen locally which can hinder recovery notwithstanding the removal of the etiologic factor? 4. Does any dyscrasia exist which lowers the resistance of the patient? 5. Is the diet of the kind that will facilitate the resistance of suppurative processes? 6. Is the patient getting a sufficient amount of sunlight for calcium fixation, the generation of the maximum number of leukocytes and other resistant factors? The author's treatment of a running ear consists of: (1) local light therapy; (2) cleansing the ear after the most thorough manner and according to particular indications, until he can discern all the details it is possible to discern with the otoscope; (3) shrinking the parts with cocaine; (4) the use of that particular therapeutic agent directly to the middle ear cavity which seems to be indicated; most often it happens to be silver nitrate or some form of iodine; (5) alcohol to dry the parts and aid in sterilization; (6) introduction of dry gauze wicks to favor drainage and act as a telltale, and (7) home treatment, consisting of cleansing with hydrogen dioxide and alcohol, three times a day.

Acute Silicosis.—Pomeranz presents roentgen and microscopic observations in five cases from a large series presenting acutely developed silicosis. The dust silica particles below 1 micron in size were found in the interstitial lung tissue and in the glands. The experiments show the extent of the toxic action of silica, especially on lung tissue, and the progressiveness of the fibrosis. That the fibrosis is progressive and irreparable can be seen from the serial roentgenograms of the living men after they gave up their occupation. The fibrosis is due to the deposit of minute particles of free silica in the interstitial tissue of the lungs. It could be considered a defense reaction of the organ to the toxic (chemical and colloidal) effect on the cells. The author observed a case of tuberculosis acutely reactivated after exposure to silica dust. It is evident that the problem is to prevent the fine particles (1 micron and less) from entering the lungs of employees. This can be achieved by: (1) mechanical improvements, such as masks and ventilation; (2) shortening the hours of exposure; (3) thorough examination of applicants, refusing an applicant who shows signs of latent or active tuberculosis; (4) periodic health examination of every employee; (5) compensation by law of every case of established silicosis; (6) discharge of any man who shows signs of even a beginning silicosis, and, (7) if all the mechanical and medical improvements do not succeed in diminishing the dangers of the exposure, discontinuance of the manufacture of this fine dust.

New Orleans Medical and Surgical Journal

85: 723-792 (April) 1933

*Treatment of Cardiac and Renal Edema. J. G. Carr, Chicago.—p. 723.
Tabulation of Cases of Rat-Bite Fever in the United States and Canada: Report of Case. C. J. Bloom, New Orleans.—p. 731.
Undulant Fever. R. H. Clark, Hattiesburg, Miss.—p. 737.
*Artificial Pneumothorax. S. F. Strain, Sanatorium, Miss.—p. 742.
Modern Concept of Diagnosis of Oral Pathology. S. L. Tiblier, New Orleans.—p. 749.
Some Etiologic Factors in Periodontoclasia: Its Prognosis and Treatment. L. J. Schoeny, New Orleans.—p. 753.

Treatment of Edema.—Carr states that, in beginning the treatment of a case of cardiac edema, it is customary to restrict the fluid intake to 1,000 cc. daily. This may be increased to a daily allowance of 1,500 cc. as the edema disappears. The fluid intake must be moderate if practiced at all, after the dropsy has disappeared, in those patients with cardiac failure in the course of malignant hypertension or nephrosclerosis in whom the specific gravity of the urine is fixed at a low level. Rest is important. The use of digitalis in cardiac failure implies simultaneous rest, rest in bed and sleep. A notable remission of symptoms and subsidence of edema may occur with rest alone, independently of any medication. The total daily intake of salt should be limited to approximately 3 Gm. It is the author's custom not to continue a course of the Karell diet for more than five days, during which the patient should be confined to bed. After the first forty-eight hours it may be supplemented by small quantities of dry food; i. e., two graham crackers with each glass of milk. The author states that there is no treatment of nephritic edema that may be recommended as a routine procedure. The types of renal edema may be considered under four heads: (1) acute nephritis (glomerular or glomerulotubular), (2) chronic glomerulotubular nephritis with edema; (3) lipoid nephrosis, and (4) the various forms of contracted kidney in which edema occurs only as a result of an acute exacerbation of nephritis or of cardiac failure. The treatment of edema in the types of renal disease may be summarized as follows: Rest in bed, fluid restriction and salt restriction is indicated in all; the inflammatory process characteristic of nephritis affords a contraindication to the use of diuretics, absolute in the acute form, relative in the chronic; and protein restriction is indicated in nephritis because of the danger of retention of the end products, while in lipoid nephro-

sis protein is indicated. In lipoid nephrosis, fats are restricted and thyroid in large doses is occasionally of value. Protein should be given freely. The xanthin diuretics are of doubtful efficacy. The mercurials are dangerous in the cases in which there are actual renal pathologic changes. In lipoid nephrosis, prior to the end stage with signs of nephritis and beginning renal insufficiency, the acid producing diuretics are of especial value, and other diuretics, including the mercurials, may be used with due regard to the conditions of the particular case. In true nephrosis, a high protein diet to balance the constant loss of large quantities of albumin, and low fat to lessen the blood cholesterol, which may be the offending substance rather than simply the result of the general condition, is indicated. Sodium chloride and fluids should be restricted. Mercurials may be used in the stage of nephrosis alone.

Artificial Pneumothorax.—Strain points out that most cases of tuberculosis diagnosed in the early stage respond satisfactorily to rest treatment; a limited number of the more advanced cases can be benefited by artificial pneumothorax. Pneumothorax immobilizes the lung, collapses cavities and prevents absorption of tuberculotoxins, relieving symptoms and permitting healing. It is indicated (1) in cases in which the disease is largely limited to one lung which does not respond to rest treatment, (2) in cavities which show no tendency to heal, (3) in hemoptysis and occasionally (4) in lung abscess and (5) bronchiectasis. It is rarely, if ever, indicated in pleurisy with effusion. It is contraindicated (1) in cases in which there is extensive disease in the better lung, (2) in advanced enteritis, (3) in extensive laryngitis, (4) in the presence of heart and kidney disease, (5) in elderly patients, (6) in asthma, emphysema and cyanosis, and (7) in neurasthenia. The technic of administering pneumothorax is not difficult but must be thoroughly understood before it is attempted. Pneumothorax must be kept up at least a year and, in most cases, from two to five years or longer. Factors interfering with successful collapse are pleural adhesions, thick walled cavities and extension of the disease in the contralateral lung. Complications incident to pneumothorax are pleural effusion, empyema, pleural shock, air embolism, and pleural effusion or spontaneous pneumothorax on the opposite side. Artificial pneumothorax has its dangers, limitations and disadvantages, but it is a procedure of great value in selected cases of pulmonary tuberculosis.

Northwest Medicine, Seattle

32: 129-172 (April) 1933

*Cirrhosis of Liver: Its Character and Incidence in Six Thousand Five Hundred Autopsies. F. R. Menne and T. W. Johnston, Portland, Ore.—p. 129.
Intersigmoid Hernia: Report of Case with Study of Anatomy of Fossa. W. C. Hunter, Portland, Ore.—p. 138.
Thickening of Terminal Ileum with Mesenteric Adenitis in Children. E. W. Rockey, Portland, Ore.—p. 145.
Prophylaxis of Peritonitis. J. F. Scott, Yakima, Wash.—p. 147.
Abdominal Pain as Diagnostic Aid. J. M. Bowers, Seattle.—p. 149.
Union of Nerve Tissue with Novocain in Spinal Anesthesia: Clinical Significance of Such Union. G. R. Vehrs, Salem, Ore.—p. 153.
Osteomyelitis. J. C. O'Day, Honolulu, Hawaii.—p. 158.

Cirrhosis of Liver.—Menne and Johnston made a study of the livers from 4,500 necropsies which, according to the partially modified classification of cirrhosis as submitted by the International Association for the study of Geographic Pathology, revealed the presence of 89 (1.36 per cent) instances subdivided as follows: (1) alcoholic atrophic cirrhosis, 28 (31.4 per cent); (2) syphilitic cirrhosis, 20 (22.4 per cent); (3) children's cirrhosis, 5 (5.6 per cent), (4) and 2 instances (2.2 per cent) of acute yellow atrophy cirrhosis. The remainder of the cases were those occurring in chronic passive congestion, fatty livers and parasitic disease. While the authors include the latter in the total number, they question their consideration as types of cirrhosis. Alcohol and other by-products of distillation (copper) act only indirectly through their effect on the gastro-intestinal tract. There is definite evidence that streptococci of intestinal tract origin produce cirrhosis. The gross clinical and pathologic manifestations of cirrhosis vary with the individual and the causative agents. The observation of such end stages has led to faulty classifications. The pathogenesis involves a disposition of deleterious substances through the portal vein, the bile ducts, the hepatic artery and the lymph nodes. Factors of augmenting obstruction are probably secondary. All the histologic changes are the result of toxicity. Therefore the terms "obstructive" and "toxic" cirrhosis cannot be applied as indicating distinctive types. The authors' studies of cirrhosis support the indirect rôle of alcohol and the greater factor of infection and metabolic products in the etiology of cirrhosis, the pathogenesis as determined experimentally and the classification as proposed by Mayo (portal and biliary), which classification they modify by the inclusion of all avenues of the diffusion of toxic substances that may excite cirrhosis of the liver.

Public Health Reports, Washington, D. C.

48: 375-410 (April 14) 1933

Experimental Studies of Water Purification: VI. General Summary and Conclusions. H. W. Streeter.—p. 377.

Surgery, Gynecology and Obstetrics, Chicago

56: 719-846 (April) 1933

Roentgen-Ray Diagnosis of Ileus: Value of Roentgenograms in Simple and Strangulated Obstruction: Experimental Study. A. Ochsner, New Orleans.—p. 719.
Application of Surgery to Hypoglycemic State Due to Islet Tumors of Pancreas and to Other Conditions. E. A. Graham and N. A. Womack, St. Louis.—p. 728.
Studies on Tumor Metastasis: I. Distribution of Metastases in Carcinoma of Cervix Uteri. S. Warren, Boston.—p. 742.
*Fate of Sidetracked Loop of Ileum Following Lateral Anastomosis for Complete, Benign Obstruction: Clinical Experimental Study. C. E. Holm, Allentown, Pa.—p. 746.
Light and Tar Cancer: Experimental Study, with Critical Review of Literature on Light as Carcinogenic Factor. M. G. Seelig and Zola K. Cooper, St. Louis.—p. 752.
Resistance of Healing Wounds to Infection. J. J. DuMortier, Boston.—p. 762.
Surgical Removal and Histologic Studies of Sympathetic Ganglions in Raynaud's Disease, Thrombo-Angiitis Obliterans, Chronic Infectious Arthritis and Scleroderma. W. McK. Craig and J. W. Kernohan, Rochester, Minn.—p. 767.
*Studies on Bronchial Occlusion by Method of Adams and Livingstone. A. Blalock and W. M. Raymond, Nashville, Tenn.—p. 779.
Surgical Management of Lip Malignancies. F. Smith, Grand Rapids, Mich.—p. 782.
*Technic of Tubo-Uterine Anastomosis (Implantation) in Interstitial and Isthmic Occlusion. A. Shafeek, Cairo, Egypt.—p. 786.
Release of Axillary and Brachial Scar Fixation. J. B. Brown, V. P. Blair and W. G. Hamm, St. Louis.—p. 791.
Cannula Gastrostomy and Enterostomy. L. R. Dragstedt, H. E. Haymond and J. C. Ellis, Chicago.—p. 799.
Leiomyoma of Jejunum. C. F. Dixon and J. A. Steward, Rochester, Minn.—p. 801.
Advantages of an Extreme Trendelenburg Position in Operations of Upper Respiratory Tract. J. A. Pettit, Portland, Ore.—p. 805.
Jejunal Ulcer: Analysis of Thirty-Six Cases and Study of Literature. E. B. Benedict, Boston.—p. 807.
*Carcinoma of Transverse Colon. T. S. Raiford, Baltimore.—p. 820.
*Punch Biopsy in Tumor Diagnosis. W. J. Hoffman, New York.—p. 829.

Sidetracked Loop of Ileum Following Lateral Anastomosis.—In two cases of complete obstruction of the terminal ileum resulting from adhesions, Holm performed various types of lateral anastomoses without removal of the ileum between the anastomosis and the obstruction. Following the anastomoses the patients developed diarrhea, borborygmus, abdominal distention, marked loss of weight and debility, without impairment of appetite. In each patient complete recovery followed resection of the sidetracked loop, which was elongated, dilated and ulcerated. The author selected the terminal ileum for his experimental study on dogs. The superficial necrosis of the mucosa in the intestine remote from the sidetracked loop indicated a general enterocolitis as the cause of the severe diarrhea in all the animals. The author assumes that a similar condition existed in the two clinical cases and was responsible for diarrhea, which persisted for months after resection of the sidetracked loops. The postoperative signs and symptoms occurring in the dogs were similar to those observed in the two patients prior to resection of the sidetracked loop. Fluoroscopic and roentgen examination aid diagnosis in detecting elongation and dilatation of the sidetracked loop of ileum in patients who exhibit the symptoms and signs of the two clinical cases. Surgeons generally recognize that it is not advisable to permit a blind limb to extend beyond a side-to-side anastomosis. In any lateral anastomosis for permanent complete obstruction, the sidetracked loop corresponds to a blind limb extending beyond the anastomosis. Whenever possible, the sidetracked ileum should be resected at the time the lateral anastomosis is done. If resection is inadvisable because of the condition of the patient, the literal anastomosis should be done as near the obstruction as possible and should be regarded

only as a first stage operation, to be followed by a resection of the sidetracked loop at a more favorable time.

Studies on Bronchial Occlusion.—Blalock and Raymond employed the method of Adams and Livingstone of producing bronchial occlusion by the local application of 35 per cent silver nitrate in experiments on dogs, puppies and cats. The high death rate in the early experiments was probably due partially to the use of an excess of the silver nitrate solution. Attempts at occlusion of the bronchus of a lobe that contained an embolic pyogenic abscess were unsuccessful. The abscess did not alter the ability of the silver nitrate to close the bronchus of an adjacent lobe. In the experiments in which adhesions between the visceral and parietal layers of pleura had been produced and in those in which a thickening of the mediastinum had been caused by irritants, the single application of silver nitrate did not result in an occlusion of the bronchus. The occlusion of the left lower and the right accessory lobes of dogs did not cause significant alterations in the cardiac output and blood pressure.

Technic of Tubo-Uterine Anastomosis.—Shafeek outlines a technic for tubal implantation. The cervix is dilated to the size of a number 8 Hegar dilator, so that a Bonney insufflator can be inserted without leakage. The insufflator is left in situ. The adhesions are liberated. The uterus and adnexa are delivered through the wound. A sound with a bulbous end is introduced into the abdominal opening of both tubes to determine the extent of their patency and the tube is cut at its innermost permeable point. At least 6 cm. of fallopian tube (ampullary and isthmial) is required for efficient utilization. The isthmial tube, which is the part usually blocked, is liberated from its mesosalpinx up to the cornu where it merges into the short interstitial part. At this junction a circular incision through serosa and muscularis is made until the fibrosed impermeable core that remains of the interstitial mucosa is encountered. This core is gently dissected out from the cornual musculature with a fine knife. The opposite side is treated in a similar manner, and a small dilator inserted in the two openings while the insufflator is manipulated. The fine tracts are then gradually dilated, the dilators passing through the two ends at the same time, until they admit the passage of the whole thickness of the tubes. Two catgut sutures are passed through the inner ends of the cut tubes, on both sides, and are tied. The sutures are then passed through the eyes of two rather long probes, which are guided, in opposite directions, through cornu, uterine fundus and the other cornu to the opposite tube, and out of the abdominal ostium together with the sutures. The sutures are then pulled in opposite directions with the result that the inner part of each cut tube is telescoped entirely into the respective cornu to the degree required. The transuterine and tubal lengths of catgut, left in situ, help to secure permanent continuity, as they remain there for some forty days. Sterile oil is introduced to prevent adhesions. After the operation the uterus is usually in a good position, and the position is insured by the shortening of the mesosalpinx. The permeability can be tested at the time by the Bonney insufflator, which has been left in its original position. In some patients it was found that the tubo-uterine permeability was still present as late as a year and a half after the operation.

Carcinoma of Transverse Colon.—On analyzing 297 cases of carcinoma of the colon, Raiford observed that only twenty-two, or 7.3 per cent, were located between the hepatic and splenic flexures. The clinical features differ little if any from those of carcinomas occurring elsewhere in the intestine. Symptoms frequently simulate those of upper abdominal pathologic conditions, such as gastric lesions or gallbladder disease, and confusion of diagnosis is not rare. Achlorhydria is found in the majority of cases. The diagnosis is made by roentgenograms following both a barium meal and a barium enema. In cases in which the observations are doubtful, the series should be repeated. It is surprising to find that tumors arising from the transverse colon involve the glandular system with relative infrequency. Metastases have a predilection for the liver. More common than metastases, however, is direct extension to the stomach and omentum, thereby causing the condition to be confused with carcinoma of the stomach. The majority of these tumors assume an annular constricting form and cause symptoms of partial obstruction. Histologically, most of the tumors are of the adenocarcinoma type with secondary mucoid degeneration. This accounts for their tendency to spread to adjacent structures and to increase the operative difficulties. The optimal treatment consists of early radical resection, followed by anastomosis. The surgeon should give particular attention to the amount of intestine resected, the preservation of the blood supply to the stumps, the prevention of tension on the anastomosis, and the method of anastomosis. Lateral anastomosis is to be preferred to the end-to-end method. The isoperistaltic or "thumb" method of anastomosis devised by Bloodgood is an advantageous procedure when sufficient intestine can be obtained without tension. This method allows a possible rupture of the blind ends to take place outside the peritoneal cavity without causing peritonitis. The results of treatment in the author's twenty-two cases have not been gratifying. Five year cures have resulted in only three cases, and cures of shorter duration in the same number. There were twelve deaths, six postoperative and six from inoperability or recurrence. The author believes that the evaluation of early symptoms by the clinician with a resultant early diagnosis and the surgeon's careful attention to the mentioned technical factors should enhance the patient's chances of recovery.

Punch Biopsy in Tumor Diagnosis.—Hoffman describes a new technic for securing biopsy specimens, the advantages of which are that early diagnosis may be obtained at a time when pathognomonic clinical features are not yet developed. It is a minor procedure done under local anesthesia in the physician's office at the time of the first examination. Most patients who refuse the suggestion of an operative biopsy consent readily to a punch biopsy. A solid piece of unchanged tissue is obtained. The piece of tissue is large enough to exhibit the characteristic structure of the portion of the tumor from which it was removed and to furnish material for immediate smear, frozen section or paraffin preparation. The tumor is punctured but once, although additional pieces of tissue may be obtained through the original puncture wound, if desired. The cutting action being positive, the tissue is cleanly cut away, the specimen is not crushed or coagulated, and the normal structural relations, in most instances, are preserved. It is successful in a wide variety of material, whether fluid, semifluid, caseous, soft cellular, densely fibrous or osteoid in character (bone tumors which have eroded the cortex). By means of the punch technic a specimen may easily be obtained from the wall of a cyst, and by means of a syringe fitted to the sheath its contents may be evacuated or opaque mediums injected. The opening in the tumor and the needle track are coagulated before withdrawal of the punch, thus rendering less likely the dissemination of the disease. The author employed this method in a series of 100 tumors. He made successful diagnoses from the material obtained in 93 per cent of the cases.

Tennessee State Medical Assn. Journal, Nashville

26: 137-176 (April) 1933

Fundamental Principles of Gastric Ulcer Therapy. E. R. Zemp, Knoxville.—p. 137.
Linitis Plastica. J. D. Lester, Nashville.—p. 144.
*Thyrotoxicosis. F. B. Bogart, Chattanooga.—p. 150.
Eastern Type of Rocky Mountain Spotted Fever. C. B. Tucker, Knoxville.—p. 157.

Thyrotoxicosis.—Bogart states that all nontoxic goiters requiring treatment for cosmetic reasons or because of pressure should be treated surgically. Nontoxic adenoma in persons more than 30 years of age is best removed surgically on account of the chance of malignant change. Malignant thyroids are best treated by radiation alone. Toxic adenoma can be cured by irradiation but is best treated by surgery because of the quicker results. Mild and moderately toxic goiters are easily and efficiently treated surgically because results can be more quickly obtained, but it should be remembered that these cases can also be treated by radiation and that in many of them equally good end-results are obtained. When associated diseases or economic or social reasons make operation inadvisable, a four months trial of radiation is justified and gratifying results are often obtained. In extremely toxic cases in which operation would endanger life, irradiation will often prove effective in clearing up the symptoms, and when a cure cannot be produced the case may be rendered operable. Irradiation is justified in patients who refuse operation.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Annals of Pickett-Thomson Research Lab., London

8: 1-738 (Dec.) 1932

The Common Cold. D. Thomson and R. Thomson.—p. 1.

British Medical Journal, London

1: 685-730 (April 22) 1933

Observations on Nutrition in Relation to Anemia. L. S. P. Davidson, H. W. Fullerton, J. W. Howie, J. M. Croll, J. B. Orr and W. Godden.—p. 685.

*Experimental Shock, with Especial Reference to Anesthesia. R. J. S. McDowall.—p. 690.

*Insulin and Glucose in Treatment of Heart Disease, with Especial Reference to Angina Pectoris. K. S. Smith.—p. 693.

Etiology of Acute Rheumatism. B. Schlesinger.—p. 697.

Unusual Case of Lymphatic Leukemia. W. E. Cooke.—p. 698.

Experimental Shock.—McDowall states that experimental shock may be divided into several varieties, which, apart from the variety produced by hemorrhage and cardiac failure, may be divided into chemical and nervous. The chemical variety is typified by histamine shock experimentally, and clinically by a delayed shock associated with gross destruction of tissue. This variety is enhanced by anesthetics. The nervous varieties may result from physical damage to the vasomotor center or its efferent paths, from afferent impulses leading to a loss of carbon dioxide (acapnia), or from inhibition of the center. Acapnia and inhibition account for the shock that follows immediately on injury. Shock dependent on afferent impulses is prevented by deep anesthesia and is reduced by morphine. The chemical and nervous varieties may coexist and enhance each other.

Insulin and Dextrose in Treatment of Heart Disease.—Smith gives an account of the successful treatment by insulin and dextrose of more than forty patients suffering from intractable angina pectoris. He gives reasons for believing that anginal pain is related to faulty carbohydrate metabolism in the heart. He believes that insulin acts immediately by its stimulating effect on glycogen metabolism in the heart, and progressively by promotion of the combustion of fat, this process leading to resolution of early atheromatous changes in the coronary arteries. In his application of dextrose-insulin therapy in angina pectoris, the patients continued taking any remedies that they had previously been taking. They continued in the same regimen of work or rest during, as before, treatment. Records of frequency, severity and duration of attacks were kept for the period prior to, during and after treatment. The method consisted in giving 5 units of insulin before breakfast and before the evening meal, each dose being followed by 30 Gm. of dextrose taken with the meal. This treatment was administered over periods varying from two to seventeen weeks.

Guy's Hospital Reports, London

83: 129-256 (April) 1933

Studies on Tumor Formation: XI. Causation: Reaction and Environment. G. W. Nicholson.—p. 131.

Report on Treatment by Radium at Guy's Hospital During 1930 and 1931. Edited by F. J. Steward.—p. 159.

Id.: Cases of Malignant Disease Treated with Radium in General Surgical Wards During the Years 1930 and 1931. F. J. Steward and A. Simpson-Smith.—p. 160.

Id.: Cases Treated with Radium in Gynecologic Department. J. B. Blaikley.—p. 166.

*Disease of Aortic Valves. M. Campbell and J. W. Shackle.—p. 168.

"Studies in Bright's Disease, No. VII": I. Histologic Sections from Kidneys of Three Cases of "Bright's Disease" Originally Described by Dr. Bright. A. A. Osman.—p. 185.

Parathyroid Tumor with General Symptoms But No Bony Deformities. J. F. Venables.—p. 194.

*Influenzal Meningitis. S. M. Silverstone.—p. 200.

Blood Pressure in Asthma. L. J. Witts.—p. 213.

Renal Dwarf: Under Observation Throughout the Whole of the "Late Rickets" or Renal Rickets Stage. H. Barber.—p. 220.

Carcinoma of Kidney: Case. C. R. E. Freezer.—p. 228.

Hernioplasty. P. Turner.—p. 233.

Fractured Pelvis, Followed by Unusual Complications: Case. D. W. C. Northfield.—p. 252.

Disease of Aortic Valves.—Campbell and Shackle observed 296 cases of disease of the aortic valves, 200 of which were due to rheumatism, 55 to syphilis, 20 to atheroma and 21 to miscellaneous causes. In most of the rheumatic cases there was a clear rheumatic history, but in 23 without such a history this diagnosis was made on the presence of mitral stenosis. If the cases with obvious mitral stenosis were excluded, the percentage figures became 52 rheumatic, 28 syphilitic, 10 atheromatous, and 10 per cent all other causes. Even after excluding all those with any evidence of mitral stenosis, rheumatism still remained the commonest cause of disease of the aortic valves. Of each six rheumatic patients three had aortic incompetence and mitral stenosis, one had these and aortic stenosis as well, one had aortic stenosis and incompetence, and one had aortic incompetence alone. When there was no mitral disease, there were two men for each woman; when there was mitral disease, there were three women for each two men. They first came under observation at all ages, least commonly before 10 or after 50. There is so little difference between those with and those without aortic stenosis that its presence must depend on the severity and nature of the attack rather than on the length of time that has elapsed. Pure aortic stenosis was rarely found and, as far as could be judged from the pulse pressure, the stenosis was relatively unimportant compared with the regurgitation, even when the signs were well marked. Among the syphilitic patients there were three men for each woman, nearly 80 per cent being between 40 and 60 years of age. Aortic stenosis was never present. The average pulse pressure was much greater in the syphilitic patients than in the rheumatic, being 110 instead of 70. Nearly all the atheromatous patients were men between 50 and 80. Aortic stenosis was more important and more often present, and the signs of regurgitation were often absent; the pulse pressure was not much less than in the rheumatic patients, but the diastolic pressure was much higher, being 92 instead of 67. Auricular fibrillation was present in 30 per cent of those who also had mitral stenosis, but only in 8 per cent of the rheumatic patients without it, and in 3 per cent of the others. Left ventricular preponderance was found in about half the electrocardiograms of those with pure aortic disease, the remainder being within normal limits. The T waves were inverted, most often in lead 1, in about one fourth of the rheumatic patients and in about one half of the others. The prognosis was enormously better in the rheumatic group. The average duration of life after the development of aortic incompetence was probably twenty years, and more when excluding those who died quickly from active rheumatic carditis. In the syphilitic group it was not much more than two years after the development of symptoms, a few patients living for eight years.

Influenzal Meningitis.—Silverstone points out that meningitis caused by the influenza bacillus bears no relation to epidemic influenza. It is caused by a strain of Haemophilus influenzae that is characterized by a high degree of virulence and pathogenicity and by a serologic homogeneity that distinguishes it from other strains of the species. In its morbid anatomy, the disease is characterized by a massive purulent meningitis and by complications that are both numerous and varied, the most remarkable of all being suppurative joints. Clinically, it presents no features that distinguish it from other forms of acute suppurative meningitis, and the diagnosis depends entirely on the demonstration of the organism in the cerebrospinal fluid. The prognosis is grave and the mortality is high. In its nature, the disease is an influenzal septicemia that tends to localize in the meninges or, less commonly, in other parts of the body. The causal organism is most commonly found in the upper or lower respiratory passages and may occasionally produce local disease in this region before invading the blood stream. Apart from lumbar, cisternal and ventricular puncture, more specific measures, such as drugs, vaccines and antiserum, have been tried by several workers, but there is no evidence that they have been of any value. Recent studies show that previous failures in serum treatment have been due to the lack of complement in the cerebrospinal fluid of patients with influenzal meningitis, and it is suggested that complement be administered with the antiserum by intrathecal inoculation (Ward and Wright).

International Journal of Psycho-Analysis, London

14: 183-296 (April) 1933

Ferenczi's Relaxation Principle. F. Alexander.—p. 183.

Psychology of Screaming. M. N. Searl.—p. 193.

Psychologic Considerations in Alcoholic Hallucinosis: Castration and Dismembering Motives. W. Bromberg and P. Schilder.—p. 206.

Some Unconscious Mechanisms in Pathologic Sexuality and Their Relation to Normal Sexual Activity. Melitta Schmideberg.—p. 225.

Irish Journal of Medical Science, Dublin

No. 88: 145-192 (April) 1933

Some Aspects of Control of Infectious Disease in a Children's Hospital. J. P. Shanley.—p. 145.
*Susceptibility of Laboratory Animals to Experimental Infection with Brucella. S. G. Rainsford.—p. 150.
The Lighting of Schools. C. Bastible.—p. 164.
Prevention of Maternal Morbidity and Mortality. B. Solomons.—p. 171.
*Pituitary Extracts in Labor. O. Browne.—p. 179.

Alcaligenes Infection.—According to the experiments of Rainsford, animal inoculation might be found of value in differentiating abortus strains from melitensis strains, and especially so in the separation of porcine from bovine strains of Alcaligenes abortus. At present the two most reliable methods, namely, the production of hydrogen sulphide on liver agar (Huddleson, 1927) and the serologic method of Pandit and Wilson (1932), succeed only in dividing Alcaligenes into two groups, an abortus group and a melitensis group. In both these methods, porcine and bovine strains fall into one common group, the abortus group. It is impossible, therefore, to distinguish porcine strains from bovine strains by either method. In the author's experiments it would appear that porcine and melitensis strains fall into one group, while the abortus bovine strains remain separate. It will therefore be easily understood why animal inoculation may be found of value in the difficult problem of identifying these porcine strains of Alcaligenes abortus. The Aleppo hamster would appear to be more susceptible than guinea-pigs to intraperitoneal injection with Alcaligenes, since abortus strains found to be avirulent for guinea-pigs successfully infected these hamsters. The author suggests that intraperitoneal injection of these animals with material such as blood or urine from suspected cases of undulant fever or milk of possibly infected animals might be found of value in the diagnosis of Alcaligenes infections. At present there is no satisfactory method of detecting urinary carriers among convalescents, and such a means might be successful. To detect whether an animal injected with such material had been infected, periodic examination of the blood of the animal for the presence of agglutinins could be relied on for accurate information. However, since all hamsters successfully infected developed a "Straus" reaction rapidly, testicular puncture and culture of aspirated fluid might be even more helpful. The author shows that when cultures were made from the seminal fluid of infected hamsters they were invariably successful in isolating the causal organism. The frequency with which the ovaries of female guinea-pigs were attacked would seem to support the view already expressed by the author (1932) that abortion in cattle and other animals is due not merely to an endometritis but to an actual invasion of the ovary itself, the endometrial changes being largely secondary to a destruction of corpus luteum. This theory is supported by the fact that infection in swine is more often shown by a failure to conceive rather than by actual abortion. Infection in goats seldom produces abortion, but when the goat does abort it is frequently found to remain sterile afterward.

Pituitary Extracts in Labor.—Browne recommends the judicious use of pituitary extracts in labor but states that indiscriminate application is to be avoided. He considers only the effects of the posterior lobe preparations and confines himself to the results produced on the uterus. Physiologically, the effect of liberation of posterior lobe extract into the general system produces increased tone and contraction in smooth muscle. This is marked in relation to uterine muscle but may be seen also in the bladder and in the walls of the intestine and of the blood vessels. The periods of labor at which stimulation can be employed are the stage of dilatation, the stage of expulsion, or after the birth of the infant. Obstruction must be excluded before pituitary preparations are administered. In the presence of a normal and fixed presentation, the membranes being intact, pituitary extracts are a safe and excellent remedy for tardy onset of labor. They will prevent the discomfort of threatening labor for two or three days before true pains commence. The injection of pituitary extract is employed as an adjunct in the induction of labor by puncture of the membranes. This is not without fetal risk; it is best used in cases of accidental hemorrhage or induction of labor following premature death of the fetus. In accidental hemorrhage, the important factor in the induction of labor is to expedite delivery and emptying of the uterus. In placenta praevia, it is of the greatest importance to avoid treatment by oxytocics. Occasionally labor does not commence within from twenty-four to forty-eight hours after version has been completed. In placenta praevia in which version has been performed, stimulation should be avoided. During the second stage of labor, prolonged delay after puncture of the membranes may safely be treated by the injection of 0.25 cc. of a standard pituitary preparation, if the presentation and the fetal heart are normal. Pituitary extracts and ergot preparations are, acceptedly, of the greatest value after birth of the placenta and membranes. They act best when given simultaneously and act most efficiently when used in the control of postpartum hemorrhage. Neither of these preparations should be given until complete birth of the placenta and membranes has taken place.

Lancet, London

1: 841-892 (April 22) 1933

Physiology of Gallbladder and Its Functional Abnormalities: II. Disorders of Motility. C. Newman.—p. 841.
*Treatment of Puerperal Septicemia with Antitoxic Serum. W. T. Benson and A. L. K. Rankin.—p. 848.
*Bilateral Obliteration of Radial and Carotid Pulses in Aortic Aneurysm. H. Cohen and T. B. Davie.—p. 852.
Ketogenic Diet: Nature of Bactericidal Agent. A. T. Fuller.—p. 855.
Chloroma: Account of Four Cases. J. Bamforth and J. L. Edwards.—p. 857.
*Value of Salicylates in Prevention of Rheumatic Relapses. C. B. Perry.—p. 861.

Antitoxic Serum in Puerperal Septicemia.—In an attempt to ascertain the therapeutic value of antitoxic serum in puerperal septicemia due to infection with Streptococcus haemolyticus, Benson and Rankin confirmed the clinical diagnosis of septicemia in 114 patients by the isolation of β-hemolytic streptococci in pure culture from the blood during life. Uterine cultures were examined in eighty-eight patients, eighty-two of whom showed the presence of β-hemolytic streptococci. In order to avoid certain fallacies, the authors gave careful attention to age periods, parity and day of illness on which the patient first came under hospital treatment. To exclude possible variations in the virulence of the infecting streptococcus, a control case was selected for each patient treated with serum. Cases of infection following abortion and depressing factors, such as undue loss of blood, prolonged labor and gross local trauma, have been about equally distributed in the two groups. Inherent resistance to infection is impossible to gage. By the application of these principles the results obtained in the fifty-seven patients treated with serum may be regarded as reasonably comparable to the observations in the fifty-seven cases in which serum was not given. Puerperal antistreptococcus serum was administered to twenty patients, and concentrated streptococcus antitoxin was used in the other thirty-seven patients. The intravenous route was adopted in twenty-four; in eighteen serum was injected both intravenously and intramuscularly, and the intramuscular route was employed in fifteen cases. For intravenous injection, 40 cc. of serum was diluted with 16 ounces (480 cc.) of saline solution. The total dose of serum varied from 10 to 330 cc. A sharp immediate reaction followed intravenous injection in many patients, but no serum fatalities occurred. Rashes, pain in the joints and other manifestations of serum disease gave rise to considerable discomfort in one fourth of the patients who survived more than a week. Epinephrine was invariably injected with the serum. The acid test of the value of serum in hemolytic streptococcic septicemia lies in its power to prevent a fatal issue. The mortality rate in the fifty-seven patients treated with serum was 75 per cent. This cannot be explained by an undue delay in the administration of the serum, as 70 per cent of the patients died who received serum treatment on the first or second day after onset of the symptoms as compared to 75 per cent receiving treatment on the fourth day or later. Temporary improvement followed the injection of serum in several patients; serum therapy may have prolonged the agony in a few, but in many no therapeutic effect could be ascertained.

Bilateral Absence of Pulse in Aortic Aneurysm.—Cohen and Davie report a case of aortic aneurysm associated with bilateral obliteration of radial and carotid pulses in which an overgrowth of subintimal connective tissue appeared to be the cause of the obliteration of the first part of the arterial trunks

concerned. It does not necessarily follow that this process of proliferation was the primary factor in the development of the condition. In fact, having regard to the extensive atheromatous lesions present in the aneurysmal sac, and with Broadbent's case as a precedent, the authors are inclined to believe that the proliferation of subintimal connective tissue followed or at most developed coincidentally with atheromatous narrowing of the arterial orifices. The absence of a similar obliterative proliferation of connective tissue in Broadbent's case is probably associated with its nonsyphilitic basis. Such syphilitic endarteritis obliterans is admittedly rare in large arteries; but it is possible that, subsequent to the marked narrowing of the orifices of the vessels by plaques of associated atheroma, the tendency to proliferation of the subintimal connective tissue, manifested in small arteries involved in syphilitic lesions, may here too have become active. This suggestion will remain unproved until more cases at intermediate stages of development of the condition have been discovered and described.

Salicylates in Rheumatic Relapses.—Perry treated forty-one children suffering from rheumatic heart disease with acetylsalicylic acid. The dose was 10 grains (0.65 Gm.) three times a day for twelve months. The patients were seen every three or four weeks and observations were made on their symptoms, physical signs and weight. The authors observed that the body weight is a valuable guide to the progress of these cases. Relapses of a rheumatic nature, i. e., chorea, arthritis or carditis, were observed in 12.1 per cent of the treated patients as compared with 17.9 per cent of the 106 controls. The abnormal physical signs in the heart decreased or disappeared in 34 per cent of the treated cases as compared with 24.5 per cent of the controls. Of the treated cases, 12.1 per cent showed an increase in the physical signs as compared with 8.4 per cent of the controls. For all ages the average gain in weight showed no significant difference in the two groups. In regard to general health, the parents of some of the patients stated that there was an improvement while others stated that the children were no better.

South African Medical Journal, Cape Town

7: 241-280 (April 22) 1933

Significance of Septic Foci in General Practice. C. E. L. Burman.—p. 243.
Accidental Injuries. G. J. C. Smyth.—p. 248.
National Invalidity Insurance. C. P. B. Wall.—p. 251.
Changing Aspect of Medical Practice. N. M. MacFarlane.—p. 253.
Modern Advances in Public Health Administration in Urban Native Areas. A. J. Milne.—p. 255.
Investigation of Unusual Case of Generalized Edema. H. L. Heimann and I. Gross.—p. 259.

Gynécologie, Paris

32: 249-304 (May) 1933

*Clinical and Diagnostic Value of Hysterosalpingography. S. D. Savelieva and V. K. Malinovskaja.—p. 249.
Value of Weight Curve for Determining Arrest, Persistence or Recurrence of Epithelioma of Uterine Cervix After Treatment. P. Petit-Dutaillis.—p. 276.

Hysterosalpingography.—Savelieva and Malinovskaja discuss hysterosalpingography on the basis of 200 cases. A study of the vaginal flora, of the condition of the uterus and of its adnexa must precede hysterosalpingography. The intervention is contraindicated in manifest infection and acute or subacute inflammation of the genital tract and during the menstrual period; chronic inflammation of the adnexa or the existence of adhesions is not a comtraindication. Iodized poppy-seed oil is introduced slowly under minimum pressure and without an anesthetic, as the reaction of the patient indicates when a sufficient quantity of oil has been injected. No complications were observed. The authors consider hysterosalpingography of great value in gynecology, not only for determining the permeability of the tubes but also for extending and making more exact the indications for surgical intervention on the tubes and the uterus in case of sterility, hemorrhages, amenorrhea and malformation and tumors of the uterus and the adnexa. It limits sharply the indications for salpingostomy in the treatment of sterility, thereby extending the indications for implantation of tubes and ovaries in the cornu of the uterus. Hysterosalpingography limits the operation of supravaginal amputation of the uterus and roentgen castration of women in cases of roentgen diagnosis of polyps and marked hyperplasia of the endometrium requiring only fundic hysterectomy or curettage. Hysterosalpingography gives an accurate idea of the details of malformation of the genital apparatus and of the possibilities of treatment. It also has a therapeutic value owing to its mechanical action. In order to avoid errors of diagnosis and to judge the therapeutic effect, the roentgenography should be repeated after from fifteen to twenty minutes, after twenty-four hours, and sometimes several months later.

Archivos Españoles de Pediatría, Madrid

17: 161-224 (April) 1933

*Treatment of Essential Nocturnal Enuresis by Solution of Pituitary. J. L. Morales González.—p. 161.
*Dry Gangrene of Foot Complicating Measles: Case. J. Garrido Lestache.—p. 179.
Postvaccinal Encephalitis: Fatal Case. F. Ramirez.—p. 184.
General Prevention of Diseases During All Periods of Infancy and Childhood. J. Garcia del Diestro.—p. 189.

Treatment of Essential Nocturnal Enuresis.—Morales González gives injections of solution of pituitary in progressive doses, starting with 0.5 cc. and increasing slowly up to 1 cc. of the solution for each injection, and in some cases up to 2 cc. Not less than three days should elapse between injections. The total number of injections is from three to eight. If any recurrence appears, the administration of two or three more injections will probably produce a complete cure. The injections should be given sublingually. The results of the treatment are not satisfactory if the injections are given by the nasal or oral routes. The author reports his results in twenty-five cases. All children in the group presented a condition of deficient nutrition and poor general physical development but without mental backwardness. Of the twenty-five cases there were 64 per cent of recoveries, 20 per cent of improvements, and in 16 per cent the patients did not react to the treatment.

Gangrene of Foot Complicating Measles.—Garrido Lestache says that surgical complications during measles are rare. The gravest is gangrene caused by acute arteritis followed by thrombosis. The condition is not one of embolism. The heart of the patient is normal. Acute arteritis in these cases represents an arterial localization of measles, the mechanism of production of which is similar to that which causes the more frequent appearance of phlegmon, abscess or other articular or osseous lesions complicating measles. The clinical picture is characterized by sudden onset with intense pain and loss of functional activity of the lower extremities, followed by symptoms of lack of circulation in the leg and gangrene. The treatment aims to keep the patient in the best general condition by means of tonics and local application of low heat until the appearance of the line of demarcation, which indicates surgical removal of the gangrenous segment of the leg. The author reports the case of an infant, aged 13 months.

Prensa Médica Argentina, Buenos Aires

20: 1285-1334 (June 14) 1933. Partial Index

Ectopic Spleen with Retroperitoneal Pedicle: Case. E. Finocchietto and J. J. Beretervide.—p. 1285.
*New Method for Roentgen Study of Stomach, Duodenum and Gallbladder. M. Estiu.—p. 1292.
Lipoma of Tongue: Case. A. H. Roffo.—p. 1319.
Tuberculous Meningitis in Infant: Case. R. A. Rivarola.—p. 1322.

Roentgen Examination of Stomach, Duodenum and Gallbladder.—Estiu presents a new method of roentgen examination of the stomach, the duodenum and the gallbladder, consisting in changing the position of the patient by inflections of the trunk to the left and to the right during the examination. During the inflections, the organs of the upper part of the abdomen and of the right superior quadrant are displaced upward and to the side opposite to that of the inflection, permitting a clear visualization of the organs and a particular projection of their shadows in the roentgenogram. The author presents the roentgenograms in fourteen cases with their diagnostic interpretation. The inflection to the left causes displacement of the antropyloric region and of the duodenal bulb to the right. It stimulates and reinforces peristalsis, accelerates the evacuation of the opaque substances from the stomach into the duodenum and permits a perfect visualization of the distal portion of the stomach. With the organs displaced during the left lateral inflection, any pathologic changes in the lesser curvature and in the duodenojejunal angle are detectable. The inflection to the right displaces the stomach upward and to the

left, leaving uncovered for visualization the duodenal quadrant and causing the dissociation of its shadow from those of the duodenal arch and of the duodenojejunal angle. The abnormal displacement of the organs to the right during the inflection to the left, and the limited displacement of the organs during the inflections, both to the right and to the left, point out the presence of disturbances of the motility of the stomach. The method of lateral inflections of the trunk is of value in the detection of pathologic changes in the contour of the stomach and of defects of filling of the organs with the opaque substances, and in the interpretation of certain spots which are observable in the roentgenogram when taken in the standard position. It is of value in the diagnosis of adhesions of the stomach and of ulcers of the duodenum. The gallbladder shows pendular oscillations during the lateral inflections. It is clearly visualized during the inflection to the left, showing a good impregnation of its neck and of the cystic and common bile ducts by the opaque substance. Its shadow appears as if it were dissociated from that of the ribs and of the vertebral column in cases in which there is a superposition of the two shadows in the examination of the patient in the standard position. A diagnosis of adhesions of the gallbladder was made in four cases and of calcified concretions of the ribs in one case in which a diagnosis of calculi of the gallbladder had been made with the patient in the standard position.

Archiv für Psychiatrie und Nervenkrankheiten, Berlin

100: 1-140 (June 15) 1933

*Blood Picture of Morphine Addicts. M. Rinkel.—p. 1.
Behavior of Corpus Geniculatum Externum and of Area Striata in Unilateral Peripheral Blindness. B. Hechst.—p. 19.
Problem of Manic Depressive Psychoses and of Pyknic Thymopathic Constitution. K. H. Stauder.—p. 32.
Provocation of Endogenic Psychoses by Incipient Paralysis. O. Oeschey.—p. 46.
Histopathology of Symptomatic Psychoses. F. Sioli.—p. 80.
Alzheimer's Disease with Pick's Atrophy of Parieto-Occipital Lobe. M. Liebers.—p. 100.
*Importance of Blood Groups in Malariotherapy. I. Somogyi and L. von Angyal.—p. 111.
Visual Fixation, Disturbances in Consciousness and in Tonus: Symptomatology of Postencephalitic Attacks. Käte Hermann.—p. 116.

Blood Picture of Morphine Addicts.—In studies on the leukocytic blood pictures of morphine addicts during the withdrawal period Rinkel found that the initial stage is characterized by a relative and, generally, an absolute increase in the neutrophils, also by relative but not always absolute lymphopenia, by hypo-eosinophilia or aneosinophilia, and by a changing number of monocytes. The stage of metabolic fluctuations, which develops about the middle or the end of the first week of withdrawal, is characterized by fluctuations in the neutrophils and lymphocytes. In some cases a considerable eosinophilia develops during this phase of the withdrawal treatment. This stage lasts comparatively long, probably in excess of the sixth week. During the third stage, lymphocytosis is the main symptom, whereas the eosinophils have reached by now a more or less normal status. It is frequently impossible to study this phase, because the patients are discharged before this time. The author discusses various theories of the pathogenesis of these changes but thinks that a definite solution is as yet impossible. At any rate, these fluctuations indicate that the biologic equilibrium of the organism of the morphine addict is disturbed for a long period. The treatment cannot be considered complete with the disappearance of the clinical symptoms but should be continued until the biologic equilibrium has been reestablished, which in some cases will require more than sixty days.

Blood Groups and Malariotherapy.—Somogyi and von Angyal point out that certain manifestations developing in the course of malariotherapy of dementia paralytica indicate a change in the biology of the malarial plasmodium. For instance, following vaccination with the tertian type, a quotidian type of fever, or fever types of twenty-eight, thirty-two or thirty-six hours may develop. It has also been observed that two persons who have been inoculated at the same time and with the same strain have a different incubation period and develop a different type of fever. The authors cite observations which indicate that the important factor in such irregularities is not the plasmodium but conditions in the inoculated person, such as whether the patient has previously undergone malariotherapy, and how much time has elapsed since his last course of arsphenamine. It is probable that, in addition to these exogenic factors, endogenic factors play a part, such as the immunobiologic characteristics of the blood and the blood groups as the carriers of iso-agglutinins and agglutinogenic substances. The authors determined the blood groups of 100 patients with dementia paralytica who underwent malariotherapy, and also the blood groups of the donors. It was found that the malarial infection is not influenced by the blood group of the patient. The blood group identity or diversity of the inoculated person and the donor has no independent significance from the point of view of malariotherapy. However, agglutination or its absence between the blood of the donor and of the recipient has a noticeable influence on the incubation period, in that the incubation period is shortened by ninety-three hours in case of negative agglutination. The type of fever, the course of the fever attacks and the incidence of spontaneous cessation of fever are not influenced by the blood group relationship of donor and recipient.

Deutsche medizinische Wochenschrift, Leipzig

59: 911-948 (June 16) 1933

Value of Examination of Eyes for Matrimonial Advice, for Choice of Occupation and for Determination of Suitability for Official Positions. L. Heine.—p. 911.
*Vaccination Treatment of Alcaligenes Abortus Infection in Human Beings. K. Poppe.—p. 913.
*Differential Diagnosis of Cholelithiasis and Tumor. G. Lepehne.—p. 916.
Present Status of Acquired Diseases of the New-Born. E. Thomas.—p. 919.
Arteriothromboses. G. Scherk.—p. 921.
Is Clauberg's New Diphtheria Culture Medium Superior to Löffler's Culture Medium? P. Schmitt.—p. 924.
Nonsurgical Mobilization on Gonorrheal, Nonosseous Ankylosis of Knee Joint. Hohmann.—p. 924.
*Ileus Following Eating of Poppy Seed. H. Zielke.—p. 925.
Unusual Twin Birth. W. Dracklé.—p. 926.
Elastic Adhesive Tape Bandages in Varicose Veins for Prevention of Thromboses Following Operations in Puerperium. K. E. Fecht.—p. 926.
Value of Tests in Allergic Diseases. Lucie Adelsberger.—p. 927.

Vaccination Treatment of Alcaligenes Abortus Infection.—In his evaluation of specific therapy, Poppe expresses the opinion that immune and convalescent serums are of no particular value, but he thinks that treatment with vaccines deserves consideration. He reports experiments with a vaccine containing ten million killed organisms in each cubic centimeter. The vaccine is administered intramuscularly. The number of injections is generally from eight to ten, with intervals of two or three days between the injections. The initial dose is usually five million organisms, and the doses are gradually increased to reach twenty million. If it becomes necessary, the series of vaccinations may be repeated. Reports of twenty cases in which this vaccine was employed show that the results were favorable in sixteen cases. The vaccine was administered only in those patients in whom the existence of an Alcaligenes abortus infection had been corroborated by agglutination and by complement fixation tests. The impression was gained that the vaccination is effective only in those instances in which a considerable reaction becomes manifest. The author mentions several other vaccines that have been tried in Alcaligenes abortus infection. He determined in animal experiments that a vaccine has an adequate protective value only if its antigenic capacity is as near as possible to the living bacterial protein. Though living bacteria have the greatest antigenic action, they cannot of course be employed in human subjects, but the aim should be to employ vaccines in which the bacterial antigen differs from that of the living organisms as slightly as possible, and the author asserts that his vaccine fulfils this requirement.

Differential Diagnosis of Cholelithiasis and Tumor.—According to Lepehne, the differentiation between lithiasis and malignant tumor of the gallbladder is not always simple. Cholelithiasis and cholecystitis may show high sedimentation values as does cancer of the gallbladder. A hard swelling of the gallbladder, an enlarged knotty liver and inflammatory ascites are not always demonstrative. The most important symptom for the differential diagnosis is the tumor of the gallbladder. However, a hard and smooth tumor is not necessarily a carcinoma, because chronic dropsy of the gallbladder, chronic empyema of the gallbladder or its tense filling with calculi may produce this symptom. More characteristic of a malignant tumor than the hard smooth gallbladder is a hard knotty

gallbladder. But this symptom frequently does not become manifest until a rather advanced stage has been reached. In patients with icterus, the intermittent or permanent character of this symptom has considerable differential diagnostic significance. Intermittent icterus generally favors calculi against tumor, but the author illustrates in a case report that a beginning malignant tumor may simulate cholelithiasis with intermittent icterus and accompanying cholangeitis. This case was not decided until a laparotomy was done. How long this intervention may be postponed, when a calculus of the choledochus seems probable, has been answered variously. If, as in the reported case, fever and chills indicate threatening septic infection, laparotomy should be done at once; in other cases, surgical intervention should not be too precipitate.

Ileus Following Eating of Poppy Seed.—In two patients, a woman, aged 55, and a man, aged 63, with the symptoms of ileus, Zielke at first was unable to determine the cause of the intestinal occlusion, but then it was found that both patients had eaten large amounts of poppy seed on the day preceding the onset of the symptoms. In the first patient the unsuccessful conservative treatment was followed by an operation, but the woman died as the result of peritonitis. In the second patient, who was observed several months later, the experiences with the first patient warned against an operative intervention, and this patient recovered following conservative therapy. The author thinks that either the ileus was mechanical, that is, produced by resorption of water and by swelling of the poppy seeds, or the alkaloid content of the poppy seed led to intestinal paralysis. Little is known about the toxicity of poppy seed, but it is usually assumed that the ripe seeds do not contain alkaloids.

Deutsche Zeitschrift für Chirurgie, Berlin

240: 663-794 (June 26) 1933

*Untoward Symptoms After Brain Operations. M. Ernst.—p. 663.
Effect of Postoperative Respiratory Disturbances on Lungs. W. Capelle and E. Fulde.—p. 673.
Suppurative Processes of Floor of Mouth and Deep Sutures of Skull. M. Wassmund.—p. 681.
*Guiding Principles in Biliary Surgery. Fedoroff.—p. 695.
Animal Experiments in Extrahepatic Biliary Tracts. W. Brackertz. —p. 707.
Pathogenesis and Treatment of Gallstone Ileus. L. Duschl.—p. 724.
Unusual Posttraumatic Observations in Patella. H. R. Paas.—p. 734.
Winter Sports Injuries. I. G. Knoflach.—p. 743.
Injuries in Coasting. I. G. Knoflach.—p. 751.
Methods for Objective Recording of Gait. G. Küntscher.—p. 762.
Gangrene of Extremity in Fractures of Leg. O. von Susani.—p. 771.
Complete Transverse Fracture of Third Lumbar Vertebra: Case. P. Deuticke.—p. 778.
Contribution to Pyelography in Traumatic Renal Lesions. G. Rintelen. —p. 782.
Question of Pseudomyxoma. H. Gangl.—p. 788.
Volvulus of Stomach. W. Bal.—p. 791.

Untoward Symptoms After Brain Operations.—Ernst reports observations on postoperative pulse and temperature in 100 patients after a brain operation. The pulse and temperature curves were found to parallel definitely the damage done to the cerebral substance. The postoperative symptom complex is due to edema of the brain, which is treated by decompressive measures. The results are promising only when treatment is applied early. Careful observations of the pulse and temperature during the first week are therefore urged by the author as a valuable method in early recognition of approaching dangerous states.

Guiding Principles in Biliary Surgery.—Fedoroff states that the mortality after operations on the biliary tracts, as based on large statistics, amounts to 9 per cent. The mortality of conservatively treated patients having gallstone disease, based on the universal literature, amounts to 15 per cent. Operations performed during the acute stage carry a mortality twice as great as that attending on operations performed in the interval. The demand for an immediate operation, as in acute appendicitis, is not justified, because the operation is more serious. Operations during an attack should not be performed except for an urgent indication. Mortality in younger patients, up to the age of 40 years, and of those operated on in the interval, amounts to 1 or 2 per cent. Icterus is the gravest complication. Blood transfusion, next to dextrose insulin, proved to be the most valuable preoperative measure in jaundiced patients. Primary closure of the abdomen is permissible only when complete peritonealization of the liver bed, of the stump of the cystic duct and of the suture line of the common bile duct is possible, and when the papilla of Vater is patent. Kehr's T drainage tube is best adapted for the drainage of the choledochus. Operations for biliary fistulas are difficult and uncertain. The author finds the method of extra-abdominal rubber tube prosthesis between the fistula and the intestine most satisfactory. Anastomosis between the gallbladder and the stomach or the duodenum is indicated only in stenosis of the choledochus or of the papilla and in cancer, but not in so-called stasis of the gallbladder. The cause of recurrent pain is seen in particular irritability of the vegetative nervous system.

Deutsches Archiv für klinische Medizin, Berlin

175: 265-384 (June 17) 1933

Significance of Intracutaneous Test for Diagnosis and Epidemiology of Alcaligenes Abortus Infection. Lerche and F. Roth.—p. 265.
*Intra-Auricular Conduction Disturbances in Human Subjects: Case of Slow, Cyclic Changes in Shape of P Wave in Electrocardiogram in Sinus Rhythm. A. Falkiewicz.—p. 273.
Myositis and Eosinophilia: Aspects of Their Relations. K. Singer. —p. 281.
Diverticula and Diverticular Formations of Stomach. Gutzeit and Kuhlmann.—p. 291.
Metabolic Investigations with Glycine in Progressive Muscular Dystrophy. S. Kostakow and A. Slauck.—p. 302.
*Acetonitrile Test in Cardiac Neurosis. G. Budelmann.—p. 311.
Diagnosis and Prognosis of Diphtheric Circulatory Impairment by Electrocardiogram. K. Hartl and W. Richter.—p. 320.
Hematologic Contributions to Problem of Malignant Diphtheria. H. Mommsen.—p. 345.
Polycythemia and Disturbances in Splenic Circulation: Pathogenesis of Erythremia. K. Singer.—p. 355.
Action of Fourth Somatic Substance Reducing Blood Pressure on Circulation of Human Beings. O. Bickenbach.—p. 366.
Behavior of Blood Sugar Following Administration of Alcohol. E. Kolta.—p. 376.

Intra-Auricular Conduction Disturbances.—Falkiewicz describes electrocardiographic curves with a cyclic, slow change in the auricular wave. It changes gradually from negative to positive and vice versa. The author cites animal experiments which seem to indicate that this is the result of a change of the auricular regulation center; that is, at times a different auricular regulation center takes over the steering from the sinus node, after which the sinus node once more takes the lead. However, the constant length of the auricular periods and the slow changes in the outlines of the P wave contradict this. The interference of two auricular centers is another possibility, but this appears unlikely. Consequently the author assumes a continuous sinus rhythm and ascribes the change in the outline of the P wave to an abnormal spreading of the stimulus from the sinus node toward the auricles, a condition that ceases after several beats, when the P wave attains a normal outline. This explanation is corroborated by the constant length of the auricular periods and by animal experiments carried out by Condorelli, which revealed a cyclic change in the P wave in dogs after phenol alcohol had been applied to the region of the sinus node. As the cause of the disturbance in the patient the author assumes short, transitory inflammatory or vascular changes that interrupt the normal connection between sinus node and auricle and thus lead to a changed conduction of the stimulus. Observations on the disturbances of intra-auricular conduction are rare, owing to their rare occurrence and to the fact that sometimes they do not cause rhythmic disturbances and so escape observation. But they are of great importance in the estimation of the condition of the cardiac muscle, particularly if they concur with disturbances of atrioventricular conduction.

Acetonitrile Test in Cardiac Neurosis.—To determine whether the conditions designated as cardiac neurosis (palpitation, pain, pressure, anxiety and occasionally acceleration of the pulse without detectable anatomic changes of the heart) may not have some organic cause, Budelmann performed the Reid Hunt acetonitrile test and the glycogen test on twenty-five patients with cardiac neurosis. The outcome of the tests indicated that the blood of some of these patients contained an excess of thyroid hormone. The author emphasizes that these patients had no other symptoms of a thyrotoxic disturbance, but he considers it nevertheless probable that a mild form of thyrotoxicosis did exist. In patients in whom both tests for the presence of an excessive amount of thyroid hormone gave a negative reaction, a thyrotoxic origin of the cardiac neurosis

is not likely. In these cases either the psyche or disturbances of the extracardial nervous system of the heart are probably responsible for the cardiac disturbances. A cardiac neurosis that can be traced to thyrotoxicosis, however, should not be considered an organic heart disease, because it is probably due to the fact that the excessive amount of thyroid hormone causes changes in the nervous system, which in turn cause the cardiac manifestations.

Medizinische Klinik, Berlin

29: 831-864 (June 16) 1933

Hypophyseal Diseases. W. Berblinger.—p. 831.
Development of Cornea. O. Grosser.—p. 837.
*Laurence-Biedl's Syndrome. A. Biedl.—p. 839.
Apparent Malpractice of Physician. P. Dittrich.—p. 840.
*Difficulties of Diagnosis "Rupture of Tube." F. Heimann.—p. 842.
Treatment of Addison's Disease by Means of Extract of Suprarenal Cortex. A. Sachs and G. Stritzko.—p. 845.
*Sensitive Method of Eliciting Patellar Reflex. E. Weidlinger.—p. 847.

Laurence-Biedl's Syndrome.—Biedl gives the histories of three patients with the Laurence-Biedl syndrome, two of whom were members of the same family. The symptoms are retinitis pigmentosa, mental deficiency, obesity, disturbances of the sexual development and, occasionally, congenital malformations (polydactylia, atresia ani and cranial deformities). The author differentiates this syndrome from familial amaurotic idiocy. The absence of obesity and the later development of cachexia, the rapidly progressing impairment of the visual capacity to complete blindness, the progressing dementia and the epileptic attacks indicate familial amaurotic idiocy. Although a complete explanation of the Laurence-Biedl syndrome is as yet impossible, the author considers it a heredodegenerative disorder consisting of a disturbance in the region of the mesencephalon, and of a chorioretinal disorder combined with other developmental abnormalities. It has nothing to do with a primary disturbance of the hypophysis. Whether the simultaneous occurrence of disturbances in the mesencephalon, in the retinal region and perhaps in other regions of the cerebrum is the result of the common derivation of these regions from the primary anterior cerebral vesicle can so far only be assumed.

Diagnosis of Ruptured Tubal Pregnancy.—Heimann illustrates with four case reports the difficulties in the diagnosis of ruptured tubal pregnancy. The first report concerns a woman in whom a ruptured tubal pregnancy of the left tube was followed by the same condition in the right tube several years later. The author discusses the advisability of the removal of the second tube in the course of the first surgical intervention. He thinks that if the second tube is normal it is advisable to leave it intact, particularly if, as in the reported case, there is a desire for more children. He asserts that the probability of an intra-uterine pregnancy is from five to six times greater than that of a repeated extra-uterine pregnancy. In the second case, the rupture of the tubal pregnancy concurred with a torsion of the pedicle, and the symptoms of the latter predominated. Probably the torsion led to rupture, for the surgical specimen shows an enormous swelling not only of the tube but also of the ovary. The enlargement of the tube corresponds to a pregnancy of the third or fourth month, while the pregnancy could, at the most, be in the sixth week. The history of the menstruation was so unclear that an extra-uterine pregnancy was at first not thought of, but it was corroborated by microscopic examination. The two other cases are noteworthy because the symptoms indicated an extra-uterine pregnancy, while the operation revealed this diagnosis to be incorrect. One patient had myomas of the uterus, an adherent ovarian cyst on the right side and a dermoid of the left tube. The author thinks that the severe attacks of pain and the weakening of the pulse may have been caused by a beginning torsion of the tumors, for he observed another patient with torsion in whom these symptoms predominated. In the other patient it was again the torsion of a cyst of the right ovary that caused the symptoms of a ruptured tubal pregnancy.

Method for Eliciting Patellar Reflex.—For the production of the patellar reflex, Weidlinger has the patient sit down so that trunk and thigh and thigh and leg form obtuse angles (more than 90 degrees). In this position, the patient places the sole of his foot on a roller on the floor and lifts the heel to such an extent that the sole is about parallel with the floor. A stroke on the tendon of the quadriceps has the effect of jerking the foot forward on the roller, if the reflex is present. With this method the patellar reflex can be elicited even in cases in which it could be done only by means of the Jendrassik maneuver. The method makes it impossible for the patient to suppress the reflex.

Monatsschrift für Kinderheilkunde, Berlin

58: 89-168 (June 14) 1933

Later Fate of Children with Intracranial Obstetric Hemmorrhages. W. Catel.—p. 89.
Experiences with Roentgen Treatment in Nonspecific Inflammatory Processes. Leonore Liebenam and H. Schönfeld.—p. 104.
Classification of Nutritional Disturbances. H. Mommsen.—p. 121.
Roentgenologic Demonstrability of Suprarenal Tuberculosis in Addison's Disease. C. Hünermann.—p. 124.
*Dietary Treatment of Dysentery. Liselotte Lennhoff.—p. 130.
Occurrence of d'Herelle's Bacteriophage on Colon and Paracolon Bacilli in Feces of Nurslings With or Without Intestinal Disturbances. E. Deák.—p. 143.
*Pathology of Nursling Toxicosis: Acid-Base Equilibrium in Enteral Toxicosis. J. Csapó and E. Kerpel-Fronius.—p. 147.
*Treatment of Anemia in Nurslings and Small Children with a Sulphur-Containing Organic Compound. A. Frank.—p. 157.

Dietary Treatment of Dysentery.—Of the 405 children having dysentery, observed by Lennhoff in the last six years, 107 were treated with citric acid milk, 94 with lactic acid milk and 184 with Moro's apple diet, and 20 nurslings were fed with breast milk and buttermilk. A comparison of the results obtained with the two types of acid milk reveals no essential differences. The technic of the Moro apple diet (abstracted in THE JOURNAL, March 1, 1930, p. 673) was modified by the author in that the unpealed, grated apples were given as the only food for two days, after a preliminary administration of tea for from twelve to twenty-four hours. Then lactic acid milk was fed to the children, and not until after this was the protein diet introduced. In comparing the therapeutic results of the acid milks and the apple diet, it was found that the improvement of the general condition, the reduction of fever, and the disappearance of the vomiting and of the tenesmus is about the same with the two methods. A difference is noticeable only in the stools, which lose the admixture of blood and mucus and attain their normal consistency sooner after the apple diet than after the other treatments. The apple diet is not suitable for nurslings of less than 8 months.

Acid-Base Equilibrium in Enteral Toxicosis.—Csapó and Kerpel-Fronius investigated the acidosis of the enteral toxicosis of nurslings. The acidosis cannot be explained by a loss in bases alone, for the reduction in the acid chlorine ion keeps step with the loss in bases. The acidosis of enteral toxicosis is not a chloride acidosis or one that is caused by a loss of bicarbonates, but it is always an organic acidosis. The accumulation of the organic acids is primarily the result of the disrupted, poisoned intermediate metabolism. Organic acidosis is the characteristic symptom that diabetic, uremic and infectious toxic comas have in common.

Treatment of Anemia by Sulphur-Containing Compound.—An organic compound of carbon disulphide with casein, when employed together with reduced iron, was found by Frank to be valuable in the treatment of nurslings and children with secondary anemia. The erythrocyte and hemoglobin values and the color index increased in a comparatively short time. The white blood picture was not changed.

Münchener medizinische Wochenschrift, Munich

80: 915-954 (June 16) 1933

My Technic of Gastric Resection. H. von Haberer.—p. 915.
*Diphtheria of Glans Penis, of Scalp and of Pharynx in Three Children of One Family. P. Dahr.—p. 921.
Significance and Technic of Examination of Eye by Practitioner. E. Engelking.—p. 923.
Arrest of Hemorrhages from Nose and Throat. Güttich.—p. 924.
When Is Roentgenoscopy Advisable? R. Grashey.—p. 926.
Patient, Disease and Practitioner. F. Moritz.—p. 928.
*Experiences with Ventriculography and Encephalography in Diagnosis of Tumors. R. Wanke.—p. 931.
Influence of Changes in Atmospheric Pressure on Human Beings. G. Schaltenbrand.—p. 934.
Microphotography with Simple Aids. K. Ebert.—p. 936.
New Trends in Studies of Capillary Vessels on Living Object. G. Salvioli.—p. 937.

Diphtheria of Glans, Scalp and Pharynx.—Dahr gives the histories of three children of one family who contracted diphtheria with different localizations. First a boy, aged 5,

developed balanitis of diphtheric etiology. Diphtheria bacilli were likewise present in the clinically healthy pharynx. A short while later the brother of this patient, aged 1, developed diphtheria of the scalp and, shortly after, a sister of the two boys developed pharyngeal diphtheria. All the diphtheria strains obtained from these children showed the same behavior, culturally, microscopically and particularly in regard to their virulence.

Encephalography in Diagnosis of Cerebral Tumors.—Wanke shows that the introduction of ventriculography and encephalography has increased the incidence of correct preoperative diagnoses of cerebral tumors. From 1920 to 1927, that is, before the application of these diagnostic methods, 41 per cent of the cases remained unexplained as to diagnosis and localization of the tumor, whereas from 1928 to 1932 only 22 per cent remained unexplained. These figures apply only to the intracerebral and the dural tumors, as the hypophyseal and acusticus tumors can be readily diagnosed. During the earlier period the number of operations performed with an indefinite diagnosis amounted to 27 per cent, while in the second period they amounted to only 9 per cent. The author admits that this improvement in diagnosis cannot all be ascribed to encephalography and ventriculography and that it is partly the result of a more exact neurologic examination and of cerebral puncture. However, a careful analysis of the material indicates that the improvements in diagnosis are noticeable particularly in tumors of the brain stem, the cerebellum and the fourth ventricle, which doubtless demonstrates the diagnostic value of ventriculography and encephalography. The author stresses the fact that, in spite of the improved diagnosis, the number of tumors found and treated in the course of the operation has remained the same, the percentage being from 31 to 33 during both periods. He questions whether an improvement of operative results can be expected from the diagnosis alone, because it frequently happens that a tumor demonstrated and localized by neurologic examination, ventriculography and cerebral puncture is vainly searched for during the operation. He points out that in this respect his conclusions largely corroborate those reached by Cushing, who stresses that the advance in the treatment of cerebral tumors is not merely the result of diagnostic methods but is rather due to a generally improved surgical technic.

Wiener klinische Wochenschrift, Vienna

46: 737-768 (June 16) 1933

Development of Hygiene as Study Subject. H. Reichel.—p. 738.
Origin and Significance of Cardiac Murmurs. S. Bondi.—p. 741.
*Investigations on New Methods for Testing Olfactory and Gustatory Sense. K. T. Dussik and O. Kauders.—p. 745.
*Symptomatic Thrombopenic Purpura Following Use of Quinine and Saffron as Abortifacients. P. Fasal and G. Wachner.—p. 747.
Antagonism Between Symptoms of Acromegaly and Those of Acromicria (Sclerodactylia and Acrosclerosis). T. Bársony.—p. 750.
Local Anesthesia by General Practitioner. R. Demel.—p. 751.
Forms of Vertigo and Its Diagnosis. R. Leidler.—p. 756.

Testing Olfactory and Gustatory Senses.—The fact that in traumas of the cranium and of the brain there is frequently an impairment of the olfactory and gustatory senses, and that the known test methods for smell and taste are still deficient, induced Dussik and Kauders to find more reliable test methods. They based their efforts on the observation that the intravenous injection of certain medicaments elicits in many patients more or less pronounced olfactory sensations. This is known particularly of neoarsphenamine. In this case, however, the olfactory and gustatory perceptions are usually not distinct from each other, but the sensation is more of the character of a gustatory smelling and the sensations are not uniform. The authors reason that the following requirements should be fulfilled by an injection fluid to be considered reliable for such tests: 1. It should be entirely harmless in the quantity to be injected. 2. It should produce olfactory and gustatory sensations in all normal persons. 3. The olfactory and gustatory sensations should have a certain intensity and they should not develop simultaneously but successively. 4. The developing sensations must be known to the person. Such a substance is a water-soluble camphor preparation, which was injected in quantities of from 0.6 to 1 cc. Observations were made in 200 normal and pathologic cases. The latter included patients with tumors or other focal diseases of the central olfactory and gustatory regions and also patients with cerebral trauma. The authors also tried several other substances, such as sodium dehydrochlorate, menthol and salts of quinine. They found the quinine preparations particularly suitable for testing the gustatory sense. In summing up the advantages of their methods they stress the following points: 1. The intravenous test permits an exact dosage and a gradation of the sensory stimulus. 2. The test is independent of the condition in which the mucous membrane is at the time. 3. It permits the detection of differences in the capacity of olfactory perception on the two sides, and the stimulus is sufficiently intense to make perception possible even if the receptive capacity is considerably impaired. 4. For the purpose of neurologic diagnosis there are several factors (duration of sensory stimulation, hypersusceptibility and hallucinatory after-sensations) that not only concern quantitative differences but also give a better insight into the functional condition of the sensory sphere. The authors hope that by trying still other substances, by which olfactory and gustatory sensations can be elicited by way of the blood stream, a method may be found that is particularly suitable for neurologic diagnosis.

Purpura Following Use of Quinine and Saffron as Abortifacients.—Fasal and Wachner present the clinical history of a woman, aged 21, who, during the third month of pregnancy, tried to produce an abortion by taking four quinine powders and a tea made from saffron (Crocus sativus). On the following day she felt ill, vomited and had a hemoptysis. Later she had slight attacks of coughing and an increase in temperature and, on the fourth day, hemorrhagic blotches developed over the entire body and particularly on the mucous membrane of the tongue, lips and gums. She had hematuria. The lungs presented hemorrhagic foci, and the blood count revealed a considerable thrombopenia. The treatment consisted of intravenous injections of calcium and subcutaneous injections of a hemostatic preparation. The blood status and the general condition gradually improved. The author admits that gestation as such may cause a hemorrhagic diathesis, but the fact that the thrombopenic purpura developed after the ingestion of the abortifacients and later subsided, in spite of the continuation of the gestation, indicates that the quinine or saffron, or a hypersusceptibility to these substances, caused the purpura. He adheres to this assumption in spite of the fact that cutaneous tests with and the ingestion of small amounts of quinine and saffron remained without reaction, and he cites other reports from the literature in which the use of saffron and quinine was followed by similar complications.

Zeitschrift f. Geburtshülfe u. Gynäkologie, Stuttgart

105: 357-512 (June 16) 1933

Potassium-Calcium Content of Blood Serum in Late Stages of Pregnancy. E. Krug.—p. 357.
*Giant Growth of Fetus. W. Pape.—p. 370.
Old and New Ideas on Releasing of Arm in Natural and Artificial Pelvic Presentation. A. Lehmacher.—p. 385.
Poisoning with Soft Soap in Attempted Abortion and in Animal Experiment. G. Haselhorst and G. Schaltenbrand.—p. 398.
Genesis and Nomenclature of Annular Placenta. F. B. Rüder.—p. 437.
Lipoma of Uterus: Case. A. Muschik.—p. 444.
*Gestation and Acute Appendicitis. G. Fátyol.—p. 449.

Giant Growth of Fetus.—In studying the records of 4,165 deliveries in the women's clinic of Osnabrück, Pape found that 558, or 13.39 per cent of the infants, were abnormally large. A comparison of this percentage with those of other clinics indicates that this is unusually high. In discussing the causes of the giant growth of fetuses, the author says it is generally believed that tall and strong parents produce large children, and he found that this applies in general to the material studied by him. This is not always the case. Short and even weak parents may have abnormally large children. It has also been observed that there are women who habitually produce large fetuses. Heredity likewise seems to play a part, for it is frequently found that the mother of a large fetus has herself been large at birth. Causes mentioned by other investigators for the giant growth of fetuses are: large size of germ plasm, excessive intra-uterine food supply (for instance, in women with diabetes mellitus), hyperactivity of the fetal hypophysis, early menarche of the mother, seasonal influences and the diet of the mother. The author doubts whether the diet of the mother influences the size of the fetus. That the age of the mother

and also the number of preceding births influence the size of the fetus has been shown by several investigators and could be corroborated by the author's material. The size of the fetus increases with the age of the mother and also with the number of preceding births. The duration of gestation seems to have a great influence on the size of the fetus, in that the pregnancy is generally prolonged in the case of large infants. Disturbances that can be traced to the large size of the fetus are noticeable during the placental period and during the puerperium. The delivery of the placenta is frequently disturbed. In 149 out of the 558 cases, Credé's expression had to be employed and, in about thirty cases, this maneuver had to be done under anesthesia. The incidence of atonic postpartal hemorrhages is also surprisingly large. The uterus, which because of the large size of the fetus has been greatly dilated and is greatly fatigued from the strain of difficult labor, frequently shows a deficient involution, and in many cases of subinvolution the discharge of the lochia is disturbed. The difficult labor and the increased morbidity explain the higher maternal and fetal mortality rates. The author thinks that if there are signs indicating an abnormally large fetus the delivery should be done in an institution.

Gestation and Acute Appendicitis.—The recognition of appendicitis during gestation is comparatively difficult, because its symptoms are readily mistaken for the molimina of pregnancy and it is understandable that only severe cases are observed. This fact induced Fátyol to describe the seven cases that came under his observation. After giving the case histories, he discusses their diagnostic difficulties and particularly their differentiation from inflammations of the uterine adnexa, torsion of the pedicle of cystic tumors, extra-uterine pregnancy, pyelitis gravidarum and cholelithiasis. The unfavorable prognosis of appendicitis during pregnancy is due to the fact that perforation is more likely. The treatment should be less conservative than is the case if there is no pregnancy; that is, surgical treatment should be resorted to even if the symptoms are not severe. This applies particularly to the second half of pregnancy, whereas during the first few months the rules of surgery should be followed. The prospects of preserving the gestation are better when surgery is resorted to within the first forty-eight hours after the attack. Early recognition of the appendicitis is of vital importance for mother and fetus.

Sovetskaya Klinika, Moscow

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Mitogenetic Rays of Gurvich in Internal Medicine. D. E. Voykhanskiy. —p. 3.
Rôle of Correlation of Salyrgan and Solution of Pituitary in Water and Chloride Exchange in the Treatment of Edemas. P. I. Mayzlish.—p. 15.
Blood Transfusion in Septic Processes. V. V. Lebedenko, I. M. Grigorovskiy and M. G. Mikhaltsov.—p. 26.
Electrocardiographic Observations in Resuscitation of Heart with Epinephrine. S. Yu. Glezer.—p. 39.
*Prevention of Heart Syncope During Operation by Means of Quinine Preparations. B. A. Egorov and Z. D. Savelyeva.—p. 60.
Motor Disturbances of Stomach As Cause of Temporary Disability: Simple Methods of Their Recognition in Ambulatory Practice. Ya. I. Daikhovskiy, V. D. Koribskiy, M. A. Lyass, B. E. Votchal and P. T. Averbakh.—p. 71.

Prevention of Heart Syncope During Operation.—Egorov and Savelyeva state that sudden arrest of the heart and the ensuing death in the course of an operation, particularly under chloroform or ether anesthesia, result most frequently not from paralysis of the heart but from acutely developing motor irritation of the cardiac muscle; that is, from ventricular fibrillation. Its prevention calls not for stimulating but rather for paralyzing drugs; hence the rationale of quinine preparations. Quinine or quinidine in doses of 0.1 Gm. twice daily diminish the predisposition to fibrillation by lowering the irritability of the neuromuscular elements of the heart. Because they possess no means of recognizing in advance the predisposition to fibrillation, the authors recommend quininization of the heart in all preoperative patients. They applied it in 100 patients admitted to the gynecologic clinic for operation. There are two contraindications to the use of quinine: (1) idiosyncrasy to the drug and (2) causation of uterine bleeding in obstetric and gynecologic states. The simultaneous use of cardiac stimulants is not contraindicated by the use of quinine. On the contrary, the effect of the use of both groups of drugs is to coordinate the complicated pathologic disturbance. There was not a death in their series, which contained patients with hypertension, valvular disease, decompensations and arrhythmias. The authors consider the number of patients in their series too small for statistical deductions but are favorably impressed by the results.

Hospitalstidende, Copenhagen

76: 577-604 (May 25) 1933

Sexual Functions of Pituitary Body and Their Significance: Review. E. Jarløv.—p. 577.
*Obstructing Tumors as Hindrance in Delivery. A. Olsen.—p. 588.
Determination of Hemoglobin After Sedimentation Reaction. H. Lebel and M. C. Lottrup.—p. 597.

Obstructing Tumors as Hindrance in Delivery.—Olsen has observed three cases during the last four years; namely, one of cervical fibroma, one of neurogangliofibroma on the anterior sacrum and one of molluscum fibrosum in the pelvic connective tissue. While these cases differ greatly, they are of similar diagnostic significance, and the possibility of such obstructions must be considered. Treatment consists in cesarean section at the beginning of delivery and thus requires diagnosis during pregnancy. In two of his cases the tumor was an accidental observation. In the majority of cases of obstructing tumor, timely recognition depends on exploration as a part of the systematic examination from the thirty-fourth to the thirty-sixth week of pregnancy.

76: 605-632 (June 1) 1933

Introduction of Electrotherapy in Denmark. G. Norrie.—p. 605.
*Treatment of Sterility and Habitual Abortion with Wheat Germ and Oil of Wheat Germ (Vitamin E). P. Vogt-Møller.—p. 621.
Hydatid Mole with Cystic Degeneration of Ovaries: Case. K. Antons. —p. 626.

Treatment of Sterility with Wheat Germ.—Vogt-Møller reports twenty-five cases in which this treatment was used. The results seem favorable, especially in habitual abortion, in which a living child was born in seventeen out of twenty cases treated.

Ugeskrift for Læger, Copenhagen

95: 687-708 (June 15) 1933

*Blood Sedimentation Reaction as Controlling Examination in Patients with Acute Febrile Diseases. H. Heckscher.—p. 687.
Wrapping of Sterile Bandages, Particularly "Bayonet Wrapping." H. Wulff.—p. 690.
On Man's Need of Protein. B. Süsskind.—p. 692.

Sedimentation Reaction in Febrile Diseases.—Heckscher examined the blood sedimentation reaction in about 700 patients with catarrhal fever and various complications. The rise, climax and fall of the sedimentation values appeared some days later than the movement of the fever curve, and in 95 per cent of the cases values normal or nearly so were established in the course of two weeks after the end of the fever.

95: 709-736 (June 22) 1933

Lesions of Meniscus. H. Abrahamsen.—p. 709.
*Undulant Fever. L. C. Stage.—p. 713.
*Xanthomatosis. G. A. Hagerup.—p. 718.
Nomenclature of Barbituric Acid Preparations. H. C. Gram.—p. 720.

Undulant Fever (Bang).—Better results were obtained with typhoid vaccine than with malta fever serum in thirty-five cases of undulant fever treated by Stage since July, 1927. He states that the fever with its characteristic course and long duration are common to all cases. The fever may be the only symptom, but there may also be headache, alone or with myalgias and neuralgias, catarrhal symptoms, abdominal symptoms, pain and tenderness in the joints, or varying combinations of these symptoms. After-examination shows that the Widal reaction is usually negative one year after recovery, but in one of the reported cases there was still a relatively marked agglutination reaction after two and one-half years.

Xanthomatosis.—Hagerup reports a case of xanthomatosis localized in the bone system in a girl, aged 2½. Diagnosis has been verified by microscopic examination. Christian's syndrome is absent. There are polycythemia and a moderately grave anemia. He says that the disorder varies greatly in the early stages and roentgen examination affords the best help in diagnosis. In his opinion, xanthomatosis is more common than is indicated by the twenty-seven case reports in the literature and therefore calls for attention.